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Bats (Mammalia: Chiroptera) of the Eastern Mediterranean. Part 2. New records and review of distribution of bats in Greece

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Abstract New records and a complete list of published records of bats from Greece are presented. Record review is supplemented with distribution maps, brief summary of distributional status, tables of measurements of newly recorded bat specimens and taxonomic notes. In total, 32 bat species were documented from Greece, viz., *Rhinolophus ferrumequinum* (Schreber, 1774) (72 record localities), *R. hipposideros* (Bechstein, 1800) (49), *R. euryale* Blasius, 1853 (17), *R. mehelyi* Matschie, 1901 (12), *R. blasii* Peters, 1866 (32), *Myotis myotis* (Borkhausen, 1797) (31), *M. blythii* (Tomes, 1857) (53), *M. bechsteini* (Kuhl, 1817) (8), *M. nattereri* (Kuhl, 1817) (11), *M. emarginatus* (Geoffroy, 1806) (21), *M. mystacinus* (Kuhl, 1817) s. l. (11), *M. aurascens* Kusjakin, 1935 (20), *M. alcathoe* Helversen et Heller, 2001 (4), *M. daubentonii* (Kuhl, 1817) (7), *M. capaccinii* (Bonaparte, 1837) (27), *Vespertilio murinus* Linnaeus, 1758 (7), *Eptesicus serotinus* (Schreber, 1774) (28), *E. (bottae) anatolicus* Felten, 1971 (7), *Hypsugo savii* (Bonaparte, 1837) (46), *Pipistrellus pipistrellus* (Schreber, 1774) s. l. (50), *P. nathusii* (Keyserling et Blasius, 1839) (25), *P. kuhlii* (Kuhl, 1817) (52), *Nyctalus noctula* (Schreber, 1774) (10), *N. leisleri* (Kuhl, 1817) (28), *N. lasiopterus* (Schreber, 1780) (10), *Barbastella barbastellus* (Schreber, 1774) (3), *Plecotus auritus* (Linnaeus, 1758) (6), *P. austriacus* (Fischer, 1829) s. l. (10), *P. austriacus* s. str. (7), *P. kolombatovici* Dulić, 1980 (5–11), *Miniopterus schreibersii* (Kuhl, 1817) (36), *Tadarida teniotis* (Rafinesque, 1814) (41), both species of *Pipistrellus pipistrellus* complex are confirmed in Greece: *P. pipistrellus* s. str. (6 records) and *P. pygmaeus* (Leach, 1825) seu *P. mediterraneus* Cabrera, 1904 (15). *Plecotus kolombatovici* has after morphological or genetical analyses been confirmed from at least four mainland Greek localities and from Crete. Two other species, *Myotis brandtii* (Eversmann, 1845) and *Eptesicus nilssonii* (Keyserling et Blasius, 1839), were recorded in closest neighbourhood of the Greek border in Bulgaria and are looked upon as candidates to the bat fauna of Greece.

Distribution, Chiroptera, the Balkans, Greece, Palaearctic Region

INTRODUCTION

The research on mammals in the Balkans, together with those in the whole eastern Mediterranean Region, began developing with a delay against the interest in mammals in central and western Europe. Following the occasional data published before World War II, more comprehensive papers began appearing only after the 1920s. They described results obtained from systematic studies undertaken by native as well as foreign specialists. In that way, the relevant data were progressively accumulated, providing a general picture of the distribution of mammals, including bats, over that important region. Such data contributed not only the knowledge of the territory *per se* but, above all, the general comprehension to zoogeography of European mammals, and, in

particular, to specificities of their distribution in the submediterranean arboreal, a region of key importance for the zoogeography of the whole western Palaearctic Region.

The whole territory of the present Republic of Greece (131 957 km², ca. 110 000 km² of mainland incl. the Peloponnese, plus over 20 000 km² of islands, incl. Crete with 8336 km²), lies in the subregion of Mediterranean arboreal and includes various habitat types, from semi-arid coastal shrubwood to forested high mountain ranges, some of them lying around 2000 m above sea level (Fig. 1). In zoogeography, this territory plays a very important role as it represents the southernmost tip of the Balkan Peninsula. It has been repeatedly an important refuge for the European fauna during the Pleistocene, and a source area for the formation of recent European mammal fauna. The zoogeographic and evolutionary importance of this region has already been demonstrated in small terrestrial mammals whose species diversity is much higher in that territory than in the rest of Europe (Cheylan 1990, Bilton et al. 1998). As regards bats, which are animals with high vagility, their contribution to the general picture of European zoogeography is not so marked. Nevertheless, detailed knowledge of the distribution of this mammal group over the Balkan Subregion is potentially useful. First, by establishing the southern limits of many widespread Western Palaearctic forms and, second, by completing data on the mammal fauna lying in the boundary between western and eastern Mediterranean, or the European and the Middle Eastern regions. The present contribution thus contains a number of substantial supplementary data, particularly concerning the southern limits of ranges of several boreal species (*Myotis daubentonii*, *Vespertilio murinus*, *Nyctalus noctula*, *Pipistrellus nathusii*, *Barbastella barbastellus*, *Plecotus auritus*). Of importance are also data on species with a typical Submediterranean distribution (*Rhinolophus* spp., *Myotis blythii*, *M. emarginatus*, *M. aurascens*, *M. capaccinii*, *Pipistrellus kuhlii*, *Hypsugo savii*, *Nyctalus lasiopterus*, *Plecotus kolombatovici*, *Miniopterus schreibersii*, *Tadarida teniotis*), providing additional data to establish their ranges in Europe. At the same time, these data are contrasted with knowledge of surrounding regions (the northern regions of the Balkans, Asia Minor, the Palaearctic part of Africa). The present contribution is also part of a series of studies summarising data obtained during long-term investigations on mammals which were conducted in the eastern part of the Mediterranean Region.

Bat research in Greece

The first modern notes (besides non-comparable data by Aristotle, f. e.) on Greek mammals date back from the 19th century (Geoffroy Saint-Hilaire 1832, Erhard 1858, Heldreich 1878), yet the first real, zoologically useful data on the occurrence of bats in the territory of the present Greece were provided by Lindermayer (1855). In his minor report, Lindermayer named locality Euboea Island for ten readily identifiable species (*Rhinolophus ferrumequinum*, *R. hipposideros*, *R. blasii*, *Vespertilio murinus*, *Eptesicus serotinus*, *Hypsugo savii*, *Pipistrellus pipistrellus* s. l., *P. kuhlii*, *Nyctalus noctula* and *Tadarida teniotis*). For several other species were reported "Morea" (= Peloponnese) or "Griechenland" (= the present territory of Sterea Ellada, Thessaly and Peloponnese) by another older authors (Keyserling & Blasius 1839, Kolenati 1856, 1859, Blasius 1857, Koch 1865), but these mentions were very probably based on real records.

Knowledge of the Greek bat fauna was further enriched by individual records published by Dobson (1878), Lataste (1885), Doria (1887), Douglass (1892) and Winge (1881). Other specific data on the bats of Greece were also recorded in the classical work of Miller (1912), supplemented by the study of Chaworth-Musters (1932). For a rather long period of time, this author was engaged in a study of mammals in the territory of Macedonia and Thessaly, and he also presented a number of original data on bats from the Olympus Mts. Until the beginning of World War II, it is worth mentioning only occasional reports on the occurrence of certain species, such as the reviews made by Boikay (1926) and Wettstein (1926, 1933, 1941). Chiropterological research in Greece did

not develop further until the 1950s, when foreign specialists includes bats in their studies devoted to wider zoological groups or to spelaeological activities (Lindberg 1955, Strinati 1955, 1959, Lanza 1957, Wolf 1964). A number of additional data of poorly known bat species are described in a series of contributions by Pieper (1966, 1977, 1978) which also evaluate for the first time the remains of bats found in owl pellets.

Many valuable data are also described in the papers aimed at various other topics, such as parasitological studies (Bau 1929, Peus 1954, Beron 1970, Aellen 1955, Hopkins & Rotschild 1956, Pieper 1965, Theodor 1967, Hurka 1972, Kock 1974, 1989).

Of particular importance are the more comprehensive papers dating from the 1960s, which summarise and evaluate data collected during thorough investigations. Among other it is the synopsis by Laar & Daan (1964), which reports the observations obtained during three-months excursion (and, moreover, aimed at herpetological research). These authors also gathered up all literary data on the bat fauna from Greece and Greek islands available at that time. In their paper, they list a total of 24 bat species from the whole territory of Greece. Of equally compilatory

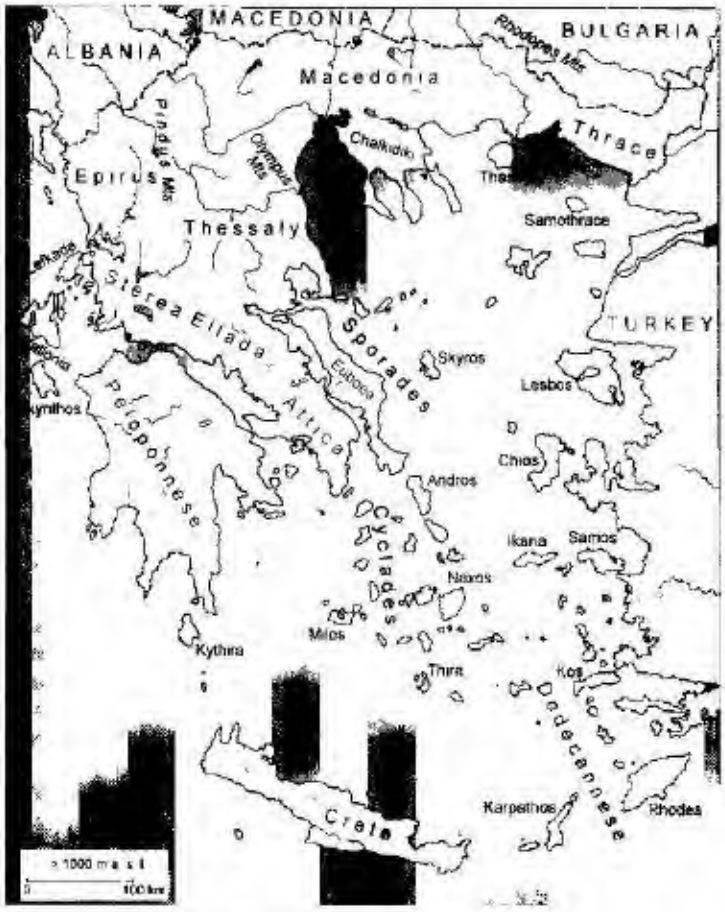

Fig. 1. A general map of Greece, main geographical features mentioned in text.

character are the papers summarising the available data on the whole mammal fauna of Greece, together with data on concrete localities (Kanellis & Hadzisarantou 1963, Ondrias 1965). These synopses report 25 bat species for Greece (adding *N. lasiopterus* after Wolf 1964) but they do not supplemented the report by Laar & Daan (1964) essentially.

An important increase in chiropterological activities in Greece took place during the 1970s and 1980s when bats were systematically investigated by Ioanna Ilopoulou-Georgudaki, a student of Professor Ondrias at the University of Patras. This author launched extensive collections of material and substantially supplemented faunal data by adding a number of new localities. In her PhD thesis (Ilopoulou-Georgudaki 1977), she also presented taxonomical analyses of most Greek bat species. She described two new bat subspecies from the territory of Greece, viz., *M. blythi lesbiacus* from Lesvos Island and, together with Ondrias, *R. ferrumequinum creticus* from Crete. She gathered up her observations in a number of papers (Ilopoulou-Georgudaki 1979, 1984, 1985, 1986, Ilopoulou-Georgudaki & Ondrias 1978, 1986, Ilopoulou-Georgudaki & Giagia 1984). Somewhat later, from the beginning of the 1980s until present, various chiropterological activities have taken place in Greece, and were carried out by groups of students and post-graduates from the University of Erlangen, Germany. Although their main interest was in echolocation studies of hunting bats, they accumulated, during repeated, rather long stays in the field, an amount of important faunal data, partly summarised by Helversen & Weid (1990) including the records of three species (*Myotis bechsteini, M. daubentonii, Barbastella barbastellus*) new to Greece. Special problems were tackled in some other papers made by members of this group of students (Volleth 1987, Weid 1988, 1994, Helversen 1989a, b, 1998, Helversen & Helversen 1994, Helversen et al. 2001, Helversen in Mitchell-Jones et al. 1999, Volleth et al. 2001) which contain a number of original faunal data, too.

Lastly, researchers from Charles University in Prague, in co-operation with Professor T. S. Sofianidou (University of Thessaloniki), have taken part in study of mammals in Greece during the 1980s and 1990s. The faunal data on bats they obtained are summarised in the present communication, so far they have only been published as parts of taxonomical studies (Kryštufek 1993, Benda & Horáček 1995a, b, Benda & Tsytsulina 2000) and will be supplemented here by a synopsis of all data hitherto published in this region.

Very valuable data on the bat fauna of the eastern Mediterranean have been provided by occasional investigations carried out on some Greek islands. At this point, Crete is the most thoroughly known as investigations were launched by Bate (1905), Miller (1912), and especially by Pohle (1953), Kahmann (1959), Martens (1967), Pieper (1977) and Ilopoulou-Georgudaki (1979) and supplemented by occasional records made by other researchers. Thus, Crete is relatively well known at present, with 15 bat species reported to occur there. Corfu was studied by Niethammer (1962) and individual records have been reported from additional Ionian islands (above all, from Zakynthos, Lefkada and Kithira). A number of interesting records have been reported from some Aegean Islands, above all, Lesbos (Ilopoulou-Georgudaki and her co-workers), Rhodes and Kos (Festa 1914, DeBeaux 1929, Pieper 1966), Chios (Kock 1974a) and some others. Most Greek islands lying in the Ionian and particularly the Aegean Sea, however, have not been investigated, even occasionally, and future investigations may bring interesting data, as suggested, e. g. by the recent record of the Asian species, *Eptesicus bottae anatolicus*, in Rhodes (Helversen 1998).

It follows from the review of both literary data and new records given below that the essential faunal information on bats of Greece appears to be roughly completed. Our contribution respects also the results of recent taxonomical revisions (Barratt et al. 1997, Benda & Tsytsulina 2000, Helversen et al. 2001, Spitzenberger et al. 2001, etc.). Though the status of the respective taxa and, above all, the actual distribution ranges of them are still uncertain. The future faunistic investigations is expected to provide fundamental data on their distribution and ecological requirements.

In the descriptions of records, the Latin transcription of geographic names, originally written in Greek alphabet, has been unified according to the system used in the relatively similar and readily accessible map atlas "Griechenland, Euro-Reiseatlas 1:300 000", Berlin-Gutersloh-Leipzig-München-Potsdam-Werder-Stuttgart: RV Reise- und Verkehrsverlag GmbH, 104 pp., 1992.

The term Macedonia is used here to denote the northern Greek region and the former Greek province. The neighbouring country of the same name (the former Yugoslav province) is termed here the Republic of Macedonia (Rep. of Macedonia). Similarly, the term Thrace denotes the Greek part of that region, whereas the part lying in the neighbouring countries are termed the Turkish Thrace or the Bulgarian Thrace.

The list of records (arranged in alphabetical and/or chronological order) includes, for each item, the following information: the name of the prefecture (n o m o s, in spaced types), the name of the locality [in brackets, number of the locality from the map, in *italics*, those not indicated in the map], and/or description of record site, date, number of recorded animals with indication of their sex (m = male, f = female), age (j = juvenile, s = subadult, a = adult) and physiological condition (G = pregnancy, L = lactation) and, in some instances, the collection of museum material deposition (IVB = Institute of Vertebrate Biology, Brno, Czech Republic, MHNG = Natural History Museum Genève, Switzerland, MKB = Museum Alexander Koenig, Bonn, Germany, MUB = Masaryk University, Brno, Czech Republic, NMP = National Museum, Praha, Czech Republic [collection numbers are with the prefix "P6V"], NMW = Natural History Museum, Wien, Austria, SMF = Senckenberg Museum Frankfurt a. M., Germany, WIC = Willy Issel Collection [the collection has been moved into the Museum Stuttgart, Germany], ZIN = Zoological Institute of Russian Academy of Sciences, Sankt-Peterburg, Russia), collection number and type of preparate (A = alcohol specimen, S = prepared skull, B = prepared dry skin).

Helversen (in Mitchell-Jones et al. 1999) has included in his distribution maps a number of unpublished records in the form of occupied quadrats, which, therefore, cannot be included in the record lists given below, however, the more important ones, especially these coming from islands, are commented upon in the text.

In the tables (Tabs 1–6), the following abbreviations were used for body and skull dimensions of examined specimens: LC = head and body length, LCd = tail length, LAt = forearm length, LA = auricle length, LTr = tragus length, G = body weight, LCr = greatest length of skull, LCb = condylobasal length of skull, LCc = condylocanine length of skull, LaZ = zygomatic width, LaI = width of interorbital constriction, LaN = neurocranium width, AN = neurocranium height, CC = rostral width between canines (incl.), M^3M^3 = rostral width between third upper molars (incl.), CM^1 = length of upper teeth-row between CM^1 (incl.), LMd = mandible length, AC_0 = height of coronoid process, CM_1 = length of lower teeth-row between CM (incl.), LB = length of tympanic bulla.

LIST OF SPECIES

Nycteris thebaica Geoffroy, 1818

Record: **Published datum**: I o n i a n I s. Korfu [= Kerkira], 11 April 1914, 1 f (Wettstein-Westersheim 1925).

Comment: Wettstein-Westersheim (1925) described a record of a specimen of *N. thebaica* from Corfu Island on the basis of his studies of earlier museum collections. In his comprehensive review of mammals of Corfu, Niethammer (1962) throws no doubt on this record and – like Pohle (1953) did earlier, or Ondrias (1965) later – he considers it to be one of a stray individual. The record is considered valid even by other authors, such as Corbet (1978). However, *N. thebaica* is distributed throughout the Afrotropical Region and is one of the Saharo-Sindian elements in the Palaearctic Region. It reaches the Mediterranean Region in the north of Egypt via the Nile valley, and from southern and central Arabia up to the Rift Valley in Palestine – the northernmost record coming from the northern shore of the Sea of Galilee (Mendelssohn & Yom-Tov 1999). Thus the record from Corfu is highly improbable, unless it pertains to an individual introduced to the island by (shipping) traffic.

Apparently, the problem has been solved during a revision of the collection preserved in the Natural History Museum in Vienna, containing the "Corfu" specimen, by a later emendation of its label, as mentioned by Van Cakenberghe & De Vree (1998): " ... the specimen's label bears a correction, changing the locality in "Egypt" ... ". Thus it is most appropriate to consider the record of *N. thebaica* in Greece to be dubious and to disregard this species as a member of Greek (and thus even European) bat fauna (see Koopman 1994, Mitchell-Jones et al. 1999, Horáček et al. 2000).

Rhinolophus ferrumequinum (Schreber, 1774)

Records: **Original data**: A c h a i a: Kastria, Lumion cave [1], 12 April 1974, 1 m, 1 f (MHNG 1325.070, 1325.071 [A]). D r a m a: Mikrópoli [2], cave, 25 March 1994, obs., large colony. – E v r o s: Didimotiho [3], cave, 21 June 1994, obs., colony 300 ind., 22 July 2000, obs., colony. – F l o r i n a: Pili, Spilia Zachariadi cave [4], 3 Sept. 2001.

obs 3 ind torp , net 1ma (NMP 49049 [S+A]) – Fokida Delfi [5], 23 Sept 1988 net 1ms (NMP 48568 [S+B]) – Halkidiki Petralona [6], cave, 28 Sept 1988 net 1fs (NMP 48608 [S]), 27 Sept 1988 net 1 ind 5–8 Oct 2000 det several ind – Frhiotida Kombotades [7], bunker cellar, 11 Sept 1996 net 1ma (NMP 48729 [S+A]) – Ilia Perivolia [8], 21 May 1959 1 ind. (ZMH) – Imathia Naoussa [9], Apano Scala cave 15 July 2000 obs 1 ind – Korintia Arhea Korinthos, Akrokorinthos [10], castle ruins, 21 Sept 1988 obs 1 ind – Lakonia Mistras [11], ruins of Byzantine town, 27 August 2001 obs 3 ind – Preveza Despotiko [12], above creek 3 July 1989 net 1fG (NMP 48709 [S+B]) – Rodopi Maronia [13], Cave of the Cyclops Polyphemos, 19 June 1989 net 3ms, 1fs (NMP 48639 [S], 48638, 48640, 48641 [S+B]), above a creek 2 km SW, 19 June 1989 net 2fL (NMP 48644, 48645 [S+B], cf Kryštufek 1993) – Trikala Meteora [14], cave, 24 August 1971 1ma (WIC 118) – Aegean Is Lesvos, Agios Isidoros [15], cave, 12 Sept 2000 net 2m – Lesvos, Agia Marina [16] Agios Bartholomeos cave 11 Sept 2000 net 4m, 6f (coll Ima MHNG 1807 097 [S+A]), – Lesvos, Efthalou [17], ancient mine 4 km E, 14 Sept 2000 net 6m, 1f, – Lesvos, Vasalika [18], ancient mine 5.5 km E, 13 Sept 2000 net 1m, – Paros Naousa [19], 10 Oct 1941 1 ind (ZMH, leg Peus), – Thassos, Archangelou monastery [20], spring 1 km W, 26 June 1989 net 3fL (NMP 48697 48699 [S+B], cf Kryštufek 1993), – Thassos, Panagia [21] Dracotrypa cave 24 June 1989 net 1ms (NMP 48688 [S+B], cf Kryštufek 1993) – Crete Agia Triada monastery (Akrotiri pen.) [22], 15 August 1971 1f (WIC 117), – Amoudara [23], small cave, 8 July 1995 obs 1 ind., – Gerani [24], rocky canyon, 16 July 1995 det 1 ind., – Hania [25], Summer 1971 1fa (WIC 116) – Gortis [26], labyrinth, 1 ind (Z!N) – **Published data** Ahaia Kastrion [= Kastria] [1], Limnon cave, 2m, 1f (Iliopoulou Georgudaki 1977, Iliopoulou-Georgudaki & Ondrias 1986) – Arkadia cave Agias Eleousis resp Ag Heleousa [27], Kinouria, resp Nea Chora [= Nea Hora], 48 ind., resp 14m, 31f (Iliopoulou-Georgudaki 1977, Ilopoulou-Georgudaki & Ondrias 1986) Attiki-Pireás Dekelion [= Dekeleia] [28], 3f (Winge 1881) – Etolia Akarnania Agrinion [= Agrinio] [29], cave, 13 March 1973 1f (Niethammer 1974) Kástrou cave [30], 1 ind (Ilopoulou-Georgudaki 1977), – Kolouria, Thermou, resp Thermos [= Thermo] [31], n Mesologgi [= Messolongi], 2m (Ilopoulou-Georgudaki 1977, Ilopoulou-Georgudaki & Ondrias 1986), – Naupactos [= Nafpaktos] [32], castle, 1f (Ilopoulou-Georgudaki 1986), – cave Varasovis, resp Varasova, n Mesologgi [= Messolongi] [33], 57 ind., resp 31m, 29f (Ilopoulou Georgudaki 1977, Ilopoulou-Georgudaki & Ondrias 1986) Evros Avantios [= Avas] [34], cave, 1f (Ilopoulou-Georgudaki 1977 Ilopoulou-Georgudaki & Ondrias 1986), – Dadia Forest Reserve [35] (Adamakopoulos et al 1995), – Didimotichon resp Didymotichon [= Didimotho] [3], cave, 3 August (July) 1971 colony ca 200 ind (Niethammer 1974, Kock 1974). Didymotichon, 8 ind (Kryštufek 1993), – cave Kamila (n Dadia) [36], 18 June 1997 obs 1 ind (Ivanova 2000), Kouvobono [= Koufovouno] [37], cave, 8–9 June 1965 (Hurka 1972, Kock 1974), cave Coufovouno, 23 July 1997 obs nurs colony of ca 100 ind (Ivanova 2000) – Ioannina Joannina [= Ioannina] [38], Sept 1963 10 ind (Kock 1974, Felten et al 1977) Kastoria Drakou resp Drakos [39] cave, 2 ind., resp 3m, 4f (Ilopoulou-Georgudaki 1977, Ilopoulou-Georgudaki & Ondrias 1986) Mavrotissis [40], cave 5 ind (Ilopoulou Georgudaki 1977) Larissa Elassou, resp Elasson [= Elassona] [41], cave Pythiou, resp Pythion, 1f (Ilopoulou-Georgudaki 1977, Ilopoulou-Georgudaki & Ondrias 1986) Pieria Monastery of St Dionysios [= Agios Dionissios] [42], after 13 May 1931 obs "fairly common" and "occured in numebers and roosted in [ ] the Monastery" (exam 4f) (Chaworth-Musters 1932) – Preveza Nikopolis [= Nikopoli] [43], ruins of the amphitheatre, 12 March 1973 1m (Niethammer 1974) – Thessaloniki Rentina [= Rendina] [44] two caves, 24 April 1955 2m [MHNG 967 062, 967 063, A] (Strinati 1959), Stavros [45], 13 March 1963 (Pieper 1965) – Viotia Parnassos reg. [= Parnassos Mts.] [46], 1 ind (Müller 1912), "Jurkgrotte, der Bielshöhle bei Rubeland, vom Parnass" [= Parnassos Mts.] (Bau 1929) Xanthi Kimmeria [47], galleries 16 May 1954 [1m (MHNG 1711 078 [A])] (Lindberg 1955), – Mandra [48], 2 ind (Kryštufek 1993), Porto Lagos [49], Febr–March 1987 1 ind (from owl pellets) (Alivizatos & Goutner 1999) – Aegean Is Euboea [= Evia] [50] (Lindermayer 1855, Kolenati 1859) Kos [51], 22 March 1966 (Martens 1967), Rhodes [= Rodos], Afandou [52], cave (DeBeaux 1929), – Rhodes [= Rodos] Siana [53] (Festa 1914), – Island of Syra [= Siros] [54] 1 ind (Müller 1912), – Skyros [= Skiros] [55] (Pohle 1953), Island of Scyros, Stamenea Brothers, 1 August 1894 1 ind ad (Bolkay 1926) – Crete Agios [= Agia] Pnevma [56], 1 ind (from owl pellets) (Pieper 1977), – Katholiko monastery (Akrotiri pen.) [57], caves, 13 March 1965 6 ind (Martens 1967), Azogyres bei Palaochora [= Azogires n Paleohora] [58], cave, 13 March 1965 3 ind (Martens 1967), – cave Lavirinthou, resp cave "Labyrinth", resp cave Mikro labyrinthaki [59], 8 August 1973 3 ind., resp 3m, 1f (Ilopoulou-Georgudaki 1977, 1979, Ilopoulou-Georgudaki & Ondrias 1986), Mylatu cave, resp cave "Mylatos" [60], 1 ind., resp 1f (Ilopoulou Georgudaki 1977, Ilopoulou Georgudaki & Ondrias 1986), – Mt Gorna monastery [= Moni Gonias] [61], 1m, 2f (Müller 1912, Theodor 1967), – NW coast, cave close to the sea [62], March 1904, 3 ind (Bate 1905), – Palaochora [= Paleohora] [63] gallery, 13 March 1965 1 ind ♀ (mummy) (Martens 1967), – Piskokefalo [64], cave, 22 March 1958 (Kahmann 1959), Rethimnon, resp Rethymnon [= Rethimno] [65], 20 April 1975 1 ind (Felten et al 1977, Kock 1989), – Sarchos [= Sarhos] [66], 10 ind (from owl pellets) (Pieper 1977), – Sitia [67], 1 ind (Felten et al 1977), Sitia, Katafygiu cave, 1958 (Kahmann 1959), Megalo

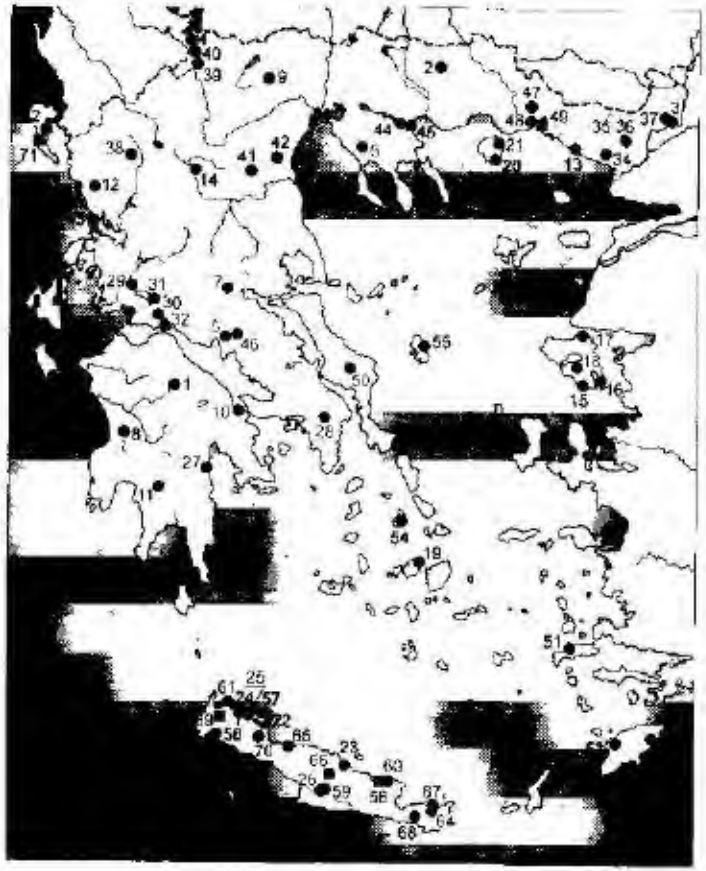

Fig. 2. Records of *Rhinolophus ferrumequinum* (Schreber, 1774) in Greece, squares denote osteological findings and circles the all other records

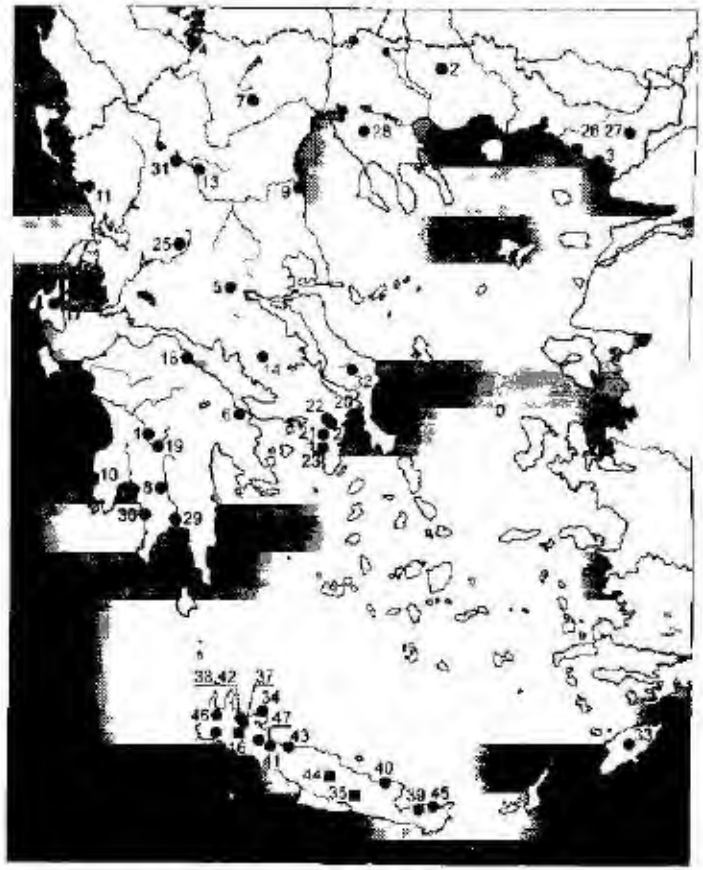

Fig. 3. Records of *Rhinolophus hipposideros* (Bechstein, 1800) in Greece, for symbol explanations see Fig. 2

Katafygi, resp Katofyngui 14–15 km SW Sitia, ost remnants (Boettger 1962, 1963, Martens 1967), – Stavhori resp Starochori [= Stavrohori] [68], 12 ind , resp 5m, 7f (Ilhopoulou-Georgudaki 1977, Ilhopoulou-Georgudaki & Ondrias 1986), – Topolia [69], cave Agnia Sophia, 16–17 March 1965 2 ind (Martens 1967) Topolia, 11 ind (from owl pellets) (Pieper 1977), – Vafes [70], Kalamafu cave, 15 Jan 1968 (Beron 1970) Ionian Is Korfu [= Kerkira], Ag Mathaeos [= Agia Matheos] [71], 3 ind (from owl pellets) (Niethammer 1962), Korfu [= Kerkira] Kanali [72] gallery 17 April 1961 1m (Niethammer 1962)

DISTRIBUTIONAL STATUS (Fig 2) On the basis of a number of records in practically all regions of Greece incl Crete and other islands, this species is distributed throughout the territory and is among the most common bats, especially in karstic areas lying at medium and lower altitudes, it is also present in mountain areas (Olympus Mts , 1100 m a s l) This is in agreement with the situation known in other Balkan countries (Albania, Rep of Macedonia, Bulgaria, Turkish Thrace, see Mitchell-Jones et al 1999) Most Greek records come from underground spaces or are the netting records at entrances to underground spaces, in rocky valleys, over waters, in ancient ruins The synanthropic occurrence of this bat species in lofts, as is known in central Europe, is to be considered exceptional or non-existent in Greece, our records have not yet demonstrated it Besides records of individual bats, evidence has been obtained of larger nursery colonies in caves, sometimes mixed with other species (*Miniopterus schreibersii*, *Myotis emarginatus*, other *Rhinolophus* species) Some records document hibernating bats (March), finds in owl pellets are also presented Helversen (in Mitchell-Jones et al 1999) supplements the above mentioned records with additional ones from the islands of Andros (or Tinos), Kassos, and Safora Thus, *R ferrumequinum* is known to occur in 13 Greek islands (incl Crete) External and cranial dimensions of examined specimens of *R ferrumequinum* from Greece are shown in Tab 1

TAXONOMIC NOTE The Greek populations of *R ferrumequinum* have been evaluated several times Felten et al (1977), in a comprehensive revision of the geographic variability of this species in the western part of the Palaearctic Region, examined, among others, a sample of several specimens coming from Epirus that they identified as *R f martinoi* Petrov, 1941, a form described from a nearby region of the Balkan Peninsula (terra typica Trifunovićevo Brdo [= Orlo Bar, see Kryštufek et al 1992], Rep of Macedonia) To this form, which they considered to be the largest in the western Palaearctic Region, they also included a sample coming from the Rep of Macedonia and from Sicily Their conclusion was used as a starting point by Ilhopoulou-Georgudaki & Ondrias (1986) in their revision of the Greek populations in which they separated the continental Greek population (which they included in *R f martinoi*) from the population of Crete which they included in a newly described subspecies, *R f creticum* Ilhopoulou-Georgudaki et Ondrias, 1986 (t l Cave Milatos Lasithi, Crete, the correct form of the name is *R f creticus*, see Koopman 1994, Mitchell-Jones et al 1999) They found this form to be markedly more gracile than the two subspecies compared from continental Europe (*R f ferrumequinum*, *R f martinoi*) Kryštufek (1993), having examined the variability of *R f ferrumequinum* populations in SE Europe, found the definition of *R ferrumequinum martinoi* to be unsubstantiated in view of a cline shift in metrical characters within populations from the north-west (Austria, Slovenia, and Slovakia) to the south-east (Albania and northern Greece) DePaz (1995) described a similar trend within the whole western Palaearctic, from Iberia and Morocco down to eastern Iran, but offered no opinion concerning the validity of the subspecific status of marginal populations such as the one from Crete Ransome (in Mitchell-Jones et al 1999) reports *R f creticus* to be the only subspecies of this species occurring in Europe besides the nominotypical one

We accept here the above mentioned views proposing to use the name *R f ferrumequinum* to denote all continental populations of this species including those on mainland Greece and probably also on the offshore islands Anyhow, the form *R f creticus* on Crete should be considered as an open problem which call for a detailed revision and comparison with the populations of *R*

ferrumequinum inhabiting neighbouring regions (Asia Minor, SE Europe, Italy, N Africa) as well as those of *R. clivosus* Cretzschmar, 1828 (N Africa). By employing both morphometric and genetical methods, the history of colonisation of Crete by this form should be traced. The described metric differences from populations inhabiting mainland Greece from that living in Sicily suggest that the history of *R. ferrumequinum* on Crete is different from that in the neighbouring regions or that Crete was colonised by this species from a different region or at a different period than were the neighbouring regions.

Rhinolophus hipposideros (Bechstein, 1800)

Records. **Original data.** Arkadia Karitena [1], chapel, 25 August 2001, obs. 2 ind. (ad.+juv.). – Drama Mikropoli [2], cave, 25 March 1994, obs. large colony. – Evros Alexandroupoli [3], 1 ind. (MKB 775686). – Florina Pili, Spilia Zahariadi cave [4], 3 Sept. 2001, obs. 2 ind., torp. det. 1 ind. – Fthiotida Kombotades [5], bunker cellar, 9 Sept. 1996, obs. 1fa+j; 10 Sept. 1996, obs. 7 ind. (net: 1ms, 2fa, 3fs; NMP 48710–48715 [S+A]); 31 August 2001, obs. colony of 11 ind. (coll. 1fa, NMP 49028 [S+A]). – Korinthia Arhea Korinthos, Akrokorinthos [6], castle ruins, 30 August 2001, obs. 1 ind. – Kozani Ermakia [7], 1 km W, 14 July 2000, net 1 ind. – Lakonia Mistras [8], ruins of Byzantine town, 27 August 2001, obs. 1 ind. – Larissa Agios Dimitrios [9], 27 July 1936, 1 ind. (ZIN). – Messinia Petrohori, Palcokastro [10], spilia Nestoros cave, 26 August 2001, obs. colony of ca. 35 ind. – Preveza Mesopotamo [11], chapel, 2 June 1989, obs. 1fa+1j. – Rodopi Maronia [12], Cave of the Cyclops Polyphemos, 19 June 1989, net 1fG (NMP 48643 [S+B]). – Trikala Meteora [13], cave, 3 August 1964, 1fL (WIC 182), 24 August 1971, 1fs (WIC 183). – Viotia Livadia [14], 1 ind. (MKB 773536). Aegean Is. Lesvos, Agia Marina [15], Agios Bartholomeos cave, 11 Sept. 2000, net, 3f. Crete, Omalos [16], cave, 13 July 1995, 1 skeleton. – Ionian Is. Kefalonia, Karavomilos [17], Finiki cave, 6 April 1970, 1m (MHNG 1709.002 [A]). – **Published data.** Ahaia Rodia [18], 1 ind. (Iliopoulou-Georgudaki 1977). Arkadia Megalopoli [19], 6 ind. (Iliopoulou-Georgudaki 1977). – Attiki-Pireas Agia Marina [20], cave, 2 ind. (Iliopoulou-Georgudaki 1977). – Athina, Katsariani [21], 2 ind. (Iliopoulou-Georgudaki 1977). – Dekelon [= Dekeleia] [22], 1m, 1f (Winge 1881). – Grotte de Kakavoula [23], 15 April 1954 [1m (MHNG 968.036 [A])] (Lindberg 1955). – Massif du Pentelikon [= Pendeli], Amomon cave [24], 31 Jan. 1954, 1 ind. [1f (MHNG 968.037 [A])] (Strinati 1955). – Evritania Kerasohorio [= Kerasohori] [25], 1 ind. (Iliopoulou-Georgudaki 1977). – Evros Alexandroupoli [3], 21 May 1962 (Kanelis & Hatzisarantou 1963). Dadia Forest Reserve [26] (Adamakopoulos et al. 1995), galleries Tsoutsourou III (= Dadia) [27], 22 July 1997, 1 ind. (Ivanova 2000). – Halkidiki Hg. Anastasia [= Agios Anastasias] [28], 27 April 1968, 1 ind. (Roer & Schober 2001). – Lakonia Flomohorio [= Flomohori] [29], 1 ind. (Iliopoulou-Georgudaki 1977). Messinia Agios Dimitrios cave (= Kardamili) [30], 2 ind. (Iliopoulou-Georgudaki 1977). – Trikala Meteora [13], 3f (Felten & Storch 1970, Felten et al. 1977), Meteora cave, 9 March 1973, 1f (Niethammer 1974). – tunnel 20 km W of Kalambaka [31], 10 March 1973, 1 ind. (Niethammer 1974). Viotia Levadia [= Livadia] [14], cave, 14 May 1952, 2 ind. (Peus 1954). – Aegean Is. Euboea [= Evia] [32] (Lindermayer 1855, Kolenati 1859). Rhodos [= Rodos] [33] (Pieper 1966). – Crete, Katholiko monastery (Akrotiri pen.) [34], caves, 13 March 1965, 2 ind. (Martens 1967). – Arkalohori [35] (from owl pellets) (Kahmann 1959). Azogyres bei Palaochora [= Azogires n. Paleohora] [36], cave, 13 March 1965, 1 ind. (Martens 1967). hills south of Khania [= Hania] [37], cave, 1 ind. (Bate 1905). way from Agya to Kitomados [= Kitomados] [38], house, 23 April 1958, 1f (Kahmann 1959). – Mesa Mouliana [39], 1958, obs. (Kahmann 1959). – Milatos [40], cave, 5 ind. (Iliopoulou-Georgudaki 1977). – Mouri (= Kournas), 14 April 1958, 1f [41] (Kahmann 1959). Omalos-Katavothron [16], 7 April 1965, 2 ind. (Martens 1967). Bryses [= Vrises] (33 km SW of Hania) [42], 1 ind. (Pohle 1953). – Rethymnon [= Rethimno] [43], 1 ind. (Felten et al. 1977). – Sarchos [= Sachos] [44], 1 ind. (from owl pellets) (Pieper 1977). Sitia [45], 1958, obs. (Kahmann 1959). – Topolia, cave Aghia Sophia [46], 16–17 March 1965, 1 ind. (Martens 1967). – Vafes [47], Kronenda cave, 15 Jan. 1968 (Beron 1970). – Ionian Is. Korfu [= Kerkira], Kanali [48], gallery, 22 March 1961, 1f (Niethammer 1962).

Distributional status (Fig. 3). Like in the preceding species, current records indicate that *R. hipposideros* is widespread throughout the territory of Greece including the islands investigated, the species is distinctly absent from the mountain regions of N Macedonia and Thrace. In general, however, this species is less common than *R. ferrumequinum*, again, the most frequent records come from the karstic areas of southern Greece and Crete where it is associated with caves as well as man-made underground spaces, but small nursery colonies have also been found in abandoned

Tab. 1. External and cranial dimensions of examined specimens of genus *Rhinolophus* Lacepède, 1799 from Greece. For abbreviations see text.

Coll. No	locality	sex	LC	LCd	LAt	LA	G	LCr	LCc	LaZ	La1	LaN	AN	CC	M¹M³	CM³	LMd	ACo	CM₁
Rhinolophus ferrumequinum																			
NMP 48568	Delfi	m	65	41	55.8	25.0	23.0	24.05	20.98	12.34	2.28	9.42	7.38	6.85	8.90	8.89	15.87	4.14	9.58
NMP 48608	Petralona	f	67	37	58.4	23.5	20.0	24.19	21.17	12.02	2.29	9.42	7.02	6.56	8.60	8.87	16.10	3.82	9.15
NMP 48638	Maronia	m	65	43	58.0	25.0	21.0	24.33	21.28	12.42	2.77	9.84	6.88	6.65	8.82	8.82	16.11	4.02	9.45
NMP 48639	Maronia	m	70	36	55.8	25.0	19.0	23.57	20.72	12.15	2.73	9.77	6.91	6.59	8.66	8.68	15.58	3.93	9.34
NMP 48640	Maronia	m	65	38	56.6	25.0	22.0	23.95	21.18	12.08	2.73	10.18	6.94	6.48	8.57	8.88	16.05	4.00	9.67
NMP 48641	Maronia	f	66	38	57.5	25.0	23.0	23.30	20.68	12.05	2.56	9.03	7.17	6.72	8.54	8.49	15.88	3.93	9.25
NMP 48644	Maronia	f	67	47	59.2	21.5	21.0	24.08	21.02	12.26	2.44	9.48	6.76	6.64	8.82	8.88	15.92	4.05	9.53
NMP 48645	Maronia	f	67	37	60.4	24.0	22.0	23.52	20.47	12.08	2.96	9.30	6.87	6.82	8.84	8.63	15.72	4.02	9.30
NMP 48688	Thassos Is.	m	67	35	58.2	24.0	18.0	23.95	20.78	12.34	2.31	9.58	7.02	6.68	8.53	8.61	15.73	3.95	9.10
NMP 48697	Thassos Is.	f	69	42	58.6	22.5	22.0	23.47	20.42	12.22	2.33	9.31	7.20	6.72	8.66	8.80	15.83	3.96	9.64
NMP 48698	Thassos Is.	f	62	42	58.4	24.0	21.5	24.07	21.08	12.08	2.58	9.28	6.87	6.74	8.60	8.71	16.13	4.12	9.46
NMP 48699	Thassos Is.	f	59	39	57.1	24.0	19.5	23.15	20.17	12.12	2.32	9.28	6.57	6.78	8.62	8.62	15.22	4.03	9.28
NMP 48709	Despotiko	f	61	40	56.9	25.0	24.0	24.17	20.92	12.42	2.09	9.22	6.79	6.74	9.07	8.84	15.82	4.20	9.42
NMP 48729	Kombotades	m	67	39	54.8	19.0	14.1	23.54	20.42	12.22	2.62	9.47	6.85	6.98	9.02	8.84	15.65	4.21	9.50
NMP 49049	Zaharadi c.	m	73	36	57.8	24.5	19.0	24.07	21.00	12.32	2.33	9.37	7.08	6.83	8.53	8.85	16.23	4.07	9.52
Rhinolophus hipposideros																			
NMP 48643	Maronia	f	36	23	34.9	16.0	7.0	15.03	13.02	7.36	1.72	6.32	4.68	3.28	5.34	5.09	9.28	1.80	5.27
NMP 48710	Kombotades	f	49	27	39.3	17.1	4.7	15.98	13.62	7.68	1.59	6.58	4.70	3.43	5.45	5.23	9.95	2.07	5.48
NMP 48711	Kombotades	m	41	30	36.5	14.1	–	–	–	13.58	7.35	1.47	6.27	4.68	3.42	5.17	5.41	9.50	1.86	5.53
NMP 48712	Kombotades	f	42	27	38.1	14.7	–	15.70	13.28	7.42	1.62	6.35	4.56	3.30	5.25	5.37	9.62	1.88	5.42
NMP 48713	Kombotades	f	40	30	37.8	15.4	4.1	15.96	13.34	7.38	1.44	6.39	4.58	3.32	5.12	5.20	9.52	1.95	5.32
NMP 48714	Kombotades	f	43	30	39.8	15.8	4.8	15.87	13.48	7.52	1.52	6.35	4.64	3.33	5.37	5.40	9.68	2.00	5.47
NMP 48715	Kombotades	f	41	26	38.8	16.5	4.1	15.98	13.40	7.35	1.60	6.21	4.69	3.40	5.20	5.17	9.35	2.01	5.52
NMP 49028	Kombotades	f	44	29	38.0	16.0	3.9	16.18	13.68	7.78	1.67	6.43	4.78	3.42	5.45	5.45	9.85	1.94	5.47

Tab. 1 continuation

Coll. No.	locality	sex	LC	LCd	LAt	LA	G	LCr	LCo	LaZ	LaI	LaN	AN	CC	M¹M¹	CM¹	LMd	ACo	CM₁
Rhinolophus cornutus																			
NMP 48595	Petralona	f	54	32	50.2	20.0	10.0	19.14	16.33	9.65	2.26	8.45	6.03	4.50	6.68	6.22	11.74	2.52	6.59
NMP 48596	Petralona	m	55	30	47.9	21.0	10.5	18.59	16.03	9.52	2.34	8.39	5.98	4.48	6.53	6.20	11.67	2.53	6.62
NMP 48597	Petralona	m	53	29	46.2	22.0	10.5	19.00	16.05	9.70	2.23	8.42	6.06	4.56	6.59	6.11	11.84	2.62	6.43
NMP 48598	Petralona	m	55	–	46.6	18.0	11.0	19.25	16.37	9.52	2.05	8.38	5.98	4.42	6.52	6.38	11.92	2.48	6.68
NMP 48604	Petralona	m	55	25	47.7	20.0	10.0	18.97	16.15	9.58	2.20	8.33	5.98	4.65	6.52	6.31	11.86	2.45	6.60
NMP 48612	Petralona	m	51	27	47.2	18.5		19.20	16.32	9.25	2.18	8.32	6.02	4.63	6.46	6.26	11.83	2.63	6.68
NMP 48613	Petralona	m	50	29	48.9	22.0		19.05	16.08	9.42	2.20	8.82	6.24	4.71	6.77	6.20	11.51	2.38	6.57
NMP 48614	Petralona	m	52	29	50.0	22.0	–	19.03	16.22	9.35	2.17	8.44	5.98	4.62	6.63	6.15	11.73	2.48	6.50
NMP 48615	Petralona	m	48	28	46.2	21.0	–	18.59	16.15	9.37	2.25	8.40	6.05	4.60	6.48	6.24	11.73	2.64	6.67
NMP 49046	Zahariadi c	f	62	32	50.9	22.6	12.3	19.72	16.67	9.47	2.08	8.19	6.11	4.67	6.57	6.42	11.85	2.57	6.63
NMW 4574	Stavros	f	48	21	47.3	20.7	10.0		–	9.43	2.07		–	4.32	6.47	6.28	11.83	2.53	6.57
NMW 29716	Ar. Korinthos	f	54	24	47.2	23.6	11.0	18.93	16.10	9.33	2.17	8.20	5.95	4.58	6.53	6.15	11.47	2.47	6.50
Rhinolophus mehelyi																			
NMP 48591	Petralona	m	59	24	51.8	23.0	13.0	19.82	16.95	10.47	2.50	9.01	6.22	4.98	7.22	6.64	12.54	2.80	6.88
NMP 48592	Petralona	f	57	31	50.4	22.0	13.0	19.95	16.86	10.23	2.47	8.62	6.07	4.98	7.22	6.60	12.42	2.81	7.07
NMP 48600	Petralona	m	57	27	49.2	22.0	13.0	20.07	17.19	10.12	2.37	8.80	6.25	5.07	7.20	6.82	12.63	2.73	7.27
NMP 48602	Petralona	m	59	27	50.8	21.0	14.0	19.96	17.02	10.26	2.58	8.92	6.38	4.97	7.18	6.72	12.45	2.92	7.02
NMP 48605	Petralona	m	57	27	51.1	22.0	12.0	20.05	17.23	10.45	2.47	9.08	6.07	5.04	7.05	6.78	12.56	2.80	7.07
NMP 48637	Maronia	f	55	33	50.5	22.0	15.0	20.52	17.43	10.55	2.62	8.84	6.33	5.02	7.38	6.78	12.82	3.02	7.21
NMP 48668	Didimotiho	f	55	29	50.2	23.0	14.0	19.87	16.90	10.28	2.40	8.65	6.27	4.91	7.10	6.50	12.46	2.84	6.94
NMP 48669	Didimotiho	f	59	31	52.1	23.0	14.5	20.14	17.18	10.46	2.47	8.80	6.17	4.85	7.20	6.64	12.73	2.93	7.08
NMP 48670	Didimotiho	f	59	28	49.6	22.5	14.0	19.87	16.78	10.26	2.38	8.89	5.93	4.73	7.06	6.54	12.45	2.96	7.08
NMP 48672	Kimmeria	f	54	35	48.2	21.5	13.5	19.87	16.79	10.07	2.46	8.59	6.07	4.98	7.15	6.62	12.47	2.78	7.12
Rhinolophus blasii																			
NMP 48590	Aidonohori	f	56	30	47.6	20.5	11.5	19.58	16.75	8.93	2.07	8.32	6.12	4.23	6.28	6.61	11.75	2.52	6.88
NMP 51479	Stoupa	–	–	–	–	–	–	20.01	16.95	9.26	2.08	7.99	6.02	4.41	6.63	6.64	12.17	2.76	6.95
NMP 51480	Stoupa	–	–	–	–	–	–	19.82	16.67	9.03	2.33	8.21	5.78	4.35	6.42	6.76	12.08	2.78	7.08
NMP 51481	Stoupa	–	–	–		–	–	19.78	16.98	9.28	2.55	8.03	6.34	4.55	6.52	6.76	12.04	2.72	6.98
NMP 51482	Stoupa	m	–	–	–	–	–	18.95	16.30	–	2.62	7.92	5.96	3.89	6.27	6.42	11.61	2.40	6.85
NMW 10805	Peloponnese	f	47	26	47.5	17.0	11.0	19.78	17.02	9.28	2.23	8.30	6.02	4.35	6.52	6.78	11.95	2.78	7.17
NMW 29717	Ar. Korinthos	f	55	27	47.3	19.0	10.5		16.95	9.17	2.42	8.02	5.90	4.47	6.43	6.67	11.95	2.60	7.15
NMW 29718	Ar. Korinthos	m	57	27	45.2	17.5	10.5	–	17.12	9.28	2.36	8.48	6.12	4.58	6.58	6.72	12.05	2.62	6.97
NMW 36149	M. Katholiko	m	52	23	45.3	19.7	10.5	19.57	16.60	9.02	2.28	8.18	6.23	4.62	6.53	6.72	11.73	2.60	6.95

d/or sacral buildings. Records at lower and medium elevations predominate but evidence is also ailable from the occurrence of this species up to 1000 m. A similar widespread occurrence of this ecies has also been demonstrated in the neighbouring Balkan countries (Albania, Rep. of Mace- nia, Bulgaria, Turkish Thrace; Mitchell-Jones et al. 1999). Helversen (in Mitchell-Jones et al 99) added important data to the distribution of *R. hipposideros* on the Aegean islands Ikaria and iros. External and cranial dimensions of examined specimens of *R. hipposideros* from Greece are own in Tab. 1.

AXONOMIC NOTE. As stated in more details elsewhere (Benda & Horáček 1998), Felten et al. (1977) ho examined a large sample of western Palaearctic material, suggest for Greece two forms, viz., *R. hipposideros* (Bechstein, 1800) (terra typica: France) that inhabits mainland Greece, and *R. h. minimus* Heuglin, 1861 (t. t.: Keren, Eritrea) on Crete. However, Corbet (1978) included all Mediter- nean populations of *R. hipposideros* with the nominotypical form. On the contrary, Koopman 994), in a conservative approach, divided European populations into four subspecies, including milarly as Miller 1912, Ellerman & Morrison-Scott 1951, and Saint-Girons & Caubere 1966) all reek populations in *R. h. minimus*.

While European specimens (from Slovakia, Bulgaria, the Caucasus Mts.) show the classical romosome formula 2n = 56, those from the Middle East (western Anatolia, Syria, Jordan) pos- ss 2n = 58 chromosomes (for a review see Zima et al. 1992, Benda & Horáček 1998). These facts ggest that Europe and the Middle East are populated by two karyotypically different races of *R. pposideros*, the division line between them passing through the eastern Mediterranean. Howev- , the Balkan lesser horseshoe bats were not sufficiently evaluated in the light of the karyological fferences found between European and Asian populations. Our evaluation of specimens from the cality Kombotades (Sterea Ellada; loc. No. 5) confirms that the mainland Greek population be- ngs to the "European" karyotype race (2n = 56, four specimens NMP 48710–48713). However, no ryological examinations have involved individuals from Crete, which would confirm or refuse nsiderations of the exclusive character of that population or of its differing from those inhabiting ainland Greece or Anatolia, as suggested by Felten et al. (1977).

Rhinolophus euryale Blasius, 1853

corps. **Original data**: A h a i a: Kastria, Limnon cave [1], 1–2 August 2000, net: 1m, 1f (coll., 1ms, MHNG 07 041 [S+A]). – F l o r i n a: Pifi, Spilia Zahariadi cave [2], 3 Sept. 2001, net: 1a (NMP 49046 [S+A]). – a l k i d i k i: Petralona [3], cave, 28 Sept. 1988, net: 8ms, 1fs (NMP 48595–48598, 48604, 48612–48615 +B]); Petralona, 1 ind. (MKB 7752). – K o r i n t h i a: Arhea Korinthos [4], water canal, 6 August 1979, mixed lony of ca. 200 ind. of medium sized horseshoe bats, coll. 1f of *R. euryale* (NMW 29716 [S+B], leg. A. & W. ar). – L a r i s s a: Ossa Mts. (no exact loc.) [5], 1 ind. (ZIN, leg. Martino). – R o d o p i: Maronia [6], Cave of Cyclops Polyphemos, 25 July 2000, obs. colony. – T h e s s a l o n i k i: Stavrós [7], bunker galleries, 12 July 79: 2f, 2j (NMW 45749 [S+A], 45750–45752 [A], leg. U. Passauer). – A e g e a n I s.: Lesvos, Agia Marina , Agios Barthelomeos cave, 11 Sept. 2000, net: 1f. – I o n i a n I s.: Kefalonia, Karavomilos [9], Fridi cave, 31 rch 1971: 2m, 1f (MHNG 1183.081–083 [A]). – **Published data**: E t o l i a A k a r n a n i a: Akarnania (no act loc.), 1894: 3ma, 4fa (Bolkay 1926). – Missolungi [= Messolongi] [10], 2f (Miller 1912). É v r o s: antos [= Avas] [11], cave, 61 ind. (Ilkopoulou-Georgudaki 1997). – cave Boulia Lefkimis (= Lefkimmi) [12], 24 y 1997: obs.: nurs. colony of ca. 200 ind. (Ivanova 2000). – Dadia, galleries Tsoutsouru II [13], 22 July 1997: 10 ind. (Ivanova 2000). – Didymotichon [= Didimotiho] [14], 3 August 1971 (Kock 1974). – Provatóna [= ovato] [= Lefkimmi] [15], cave, 28 July 1987: 1ms, 3fa, 7fs (Cruciti 1988). – H a l k i d i k i: Petralona [3], 25 y 1962 (Kanellis & Hatzissarantou 1963). – T r i k a l a: Meteóra [16], cave, 9 March 1973: 1f (Niethammer 74). – I o n i a n I s.: Petala [= Petalas] [17] (Ondrias 1965, with quoting of Bolkay 1926, who in reality didn't ntion this record).

STRIBUTIONAL STATUS (Fig. 4). The distribution of the few records from Greece summarised here and e situation in the neighbouring countries suggest that the range of this species covers the whole uthern part of the Balkan Peninsula. Evidence is still missing of its occurrence in some parts of

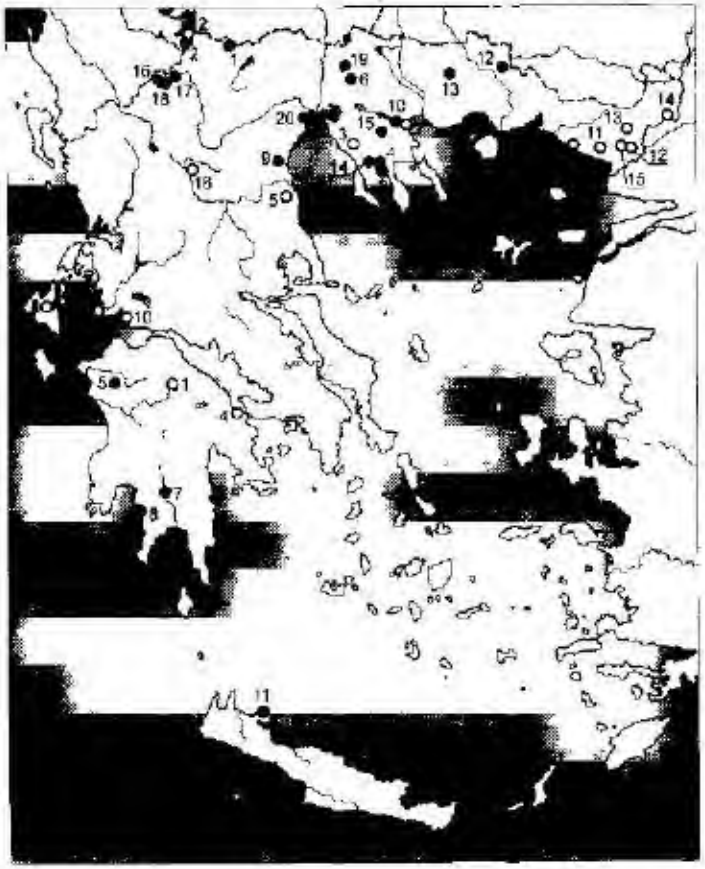

Fig 4 Records of *Rhinolophus euryale* Blasius, 1853 (open symbols) and *Myotis aurascens* Kusjakin, 1935 (closed symbols) in Greece; for symbol explanations see Fig 2

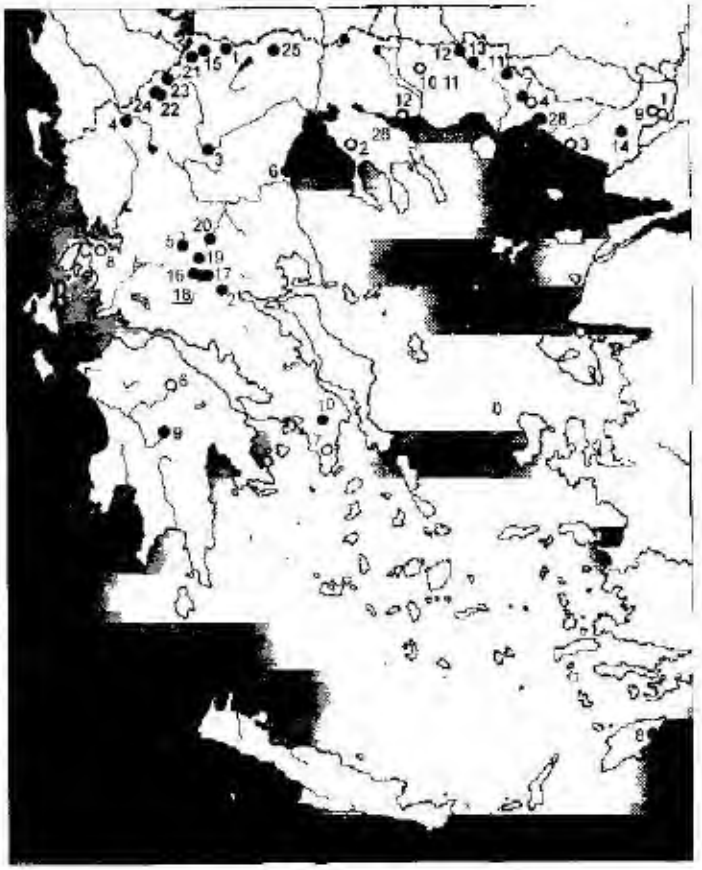

Fig 5 Records of *Rhinolophus mehelyi* Matschie, 1901 (open symbols) and *Nyctalus leisleri* (Kuhl, 1817) (closed symbols) in Greece; for symbol explanations see Fig 2.

Greece although Helversen (in Mitchell-Jones et al 1999) brings some records from Attica, eastern Macedonia, and Rhodes The available data are currently insufficient to evaluate the abundance of his species, one may only assume it to be considerably rarer than the two preceding *Rhinolophus* pp The hitherto records come from the lower altitudes in which the species is exclusively confined o caves, a large part of the data have been obtained by netting. External and cranial dimensions of examined specimens of *R. euryale* from Greece are shown in Tab 1

Rhinolophus mehelyi Matschie, 1901

RECORDS **Original data** Evros Didimotiho [1] cave 22 June 1989 net 3fL (NMP 48668–48670 [S+B]) Halkidiki Petralona [2], cave 28 Sept 1988 net 4ms 1fs (NMP 48591 48592, 48600, 48602, 48606 S+B]) – Rodopi Maronia [3], Cave of the Cyclops Polyphemos, 18 June 1989 net 1faL (NMP 4860 S+B]) Xanthi Kimmeria [4], gallery, 23 June 1989 net 1fL (NMP 48672 [S+B]), 20 July 2000 capt 1fal st – Aegean Is Lesvos Efthalou [5], ancient mine 4 km E, 14 Sept 2000 net 3m (coll 1ma, MHNG 807 001 [S+A]) **Published data** Ahaia Klitoria [6], Limnon cave, 1m, 1f (Ihopoulou-Georgudaki 1977) Attiki- Pireas Nymphis Kouvara [= Kouvaras] [7], cave, 27 Jan 1954 1 skull (Strinati 1955) Etolia Akarnania Monastiraki [8], cave Simou, 1f (Ihopoulou-Georgudaki 1977) – Evros Didimotiho [= Didimotho] [1] cave, 3 August 1971 ca 400 ind (Niethammer 1974) Didymoticho, 12 Sept 1990 1 id of *R* cf *mehelyi* (from owl pellets) (Vohralik & Sofianidou 1992). – Kouvobono [= Koufovouno] [9] cave 9 June 1965 (Hurka 1972), cave Coufovouno, 23 July 1997 obs nurs colony of ca 500 ind (Ivanova 2000) Halkidiki Petralona [2], 15 March 1963 (Pieper 1965) Serres Chrysopigon, resp Chrysopighi [= Irisopigi] [10], grotte Nasioutsik 7–12 May 1954 [1m, 1f (MHNG 925 089 [A], 925 090 [S+A])] (Lindberg 955 Aellen 1955), – Saint Jean-le-Prodrome [= Agios Ioannis Prodromos] [11], cave Pelade, 6 May 1954 [1 MHNG 925 091 [A]) (Lindberg 1955) – Thessaloniki Vrasna [= Vrassna] [12] 12 March 1963 (Pieper 965)

DISTRIBUTIONAL STATUS (Fig 5) According to the small number of records, the species appears to be he least common of all Greek representatives of the genus Moreover, the hitherto data are limited o the north-eastern part of Greece (Halkidiki, Thrace) and its southern part (Peloponnese, Attica) Helversen (in Mitchell-Jones et al 1999) presents additional records from the south of mainland Greece only However, the known range of this species in the Balkans also reaches the Rep of Macedonia, Bulgaria, Turkish Thrace and southern Romania (Mitchell-Jones et al 1999) External nd cranial dimensions of examined specimens of *R. mehelyi* from Greece are shown in Tab 1

Rhinolophus blasii Peters, 1866

RECORDS **Original data** Evros Avas [1] road 2 km S, 20 June 1989 net 1fL – Halkidiki Petralona [2] ave, 28 Sept 1988 net 4ms, 3fs (NMP 48593, 48594 48599, 48601, 48603, 48606, 48607 [B]), 1ms, 1fs, 18 une 1989 net 5m 4f – Ioannina Aidonohori (2 km W of Melissopetra) [3], Aoos river 28 Sept 1988 et 1fs (NMP 48590 [S+B]) Korinthia Arhea Korinthos [4], water canal, 6 August 1979 mixed colony f ca 200 ind of medium sized horseshoe bats, coll 1m, 1f of *R. blasii* (NMW 29717, 29718 [S+B] leg A & W aar) – Messinia Stoupa [n Kardamili) [5], 8 July 1991 2m, 2f (NMP 51479–51482, leg Andera & bytovsky) – Rodopi Maronia [6], Cave of the Cyclops Polyphemos, 18 June 1989 net 3fa (NMP 48634- 8636 [B]) – Aegean Is Lesvos, Efthalou [7], ancient mine 4 km E, 14 Sept 2000 net 2m (coll 1ma MHNG 1807 098 [S+A]) – Crete Katholiko monastery (Akrotiri pen.) [8], cave 11 Sept 1986 net 1m NMW 36149 [S+B], leg A Baar & W Polz), – Katofigi [9], cave, 9 May 1959 skull (MHNG 1705 079), arhus [10] cave 10 April 1955 1m, 3f (MHNG 1713 084–087 [S+A]) – Morea (= Peloponissos) no exact loc 2 June 1885 1fa (NMW 10805 [S+A], leg E Reitter) – **Published data** Argolida Nauplia [= Nafplio] 1], 1 ind (Miller 1912) – Attiki- Pireas Dekelion [= Dekeleia] [12], 1f (as *R. clivosus*, Winge 1881) Liopesi [13], 17m (Ihopoulou-Georgudaki 1977) – Etolia Akarnania Akarnania (no exact loc) 894 5ma 3fa (Bolkay 1926), – Krionerion [= Krioneria] [14], 4 Febr 1897 1ma (Bolkay 1926) – Evros ndia Forest Reserve [15] (Adamakopoulos et al 1995) – Halkidiki Petralona [2] 15 March 1963 (Pieper 965) Thessaloniki Vrasna [= Vrassna] [16], 19 March 1963 (Pieper 1965) – Aegean Is Euboea - Evia] [17] (as *R. clivosus*, Lindermayer 1855, Kolenati 1859), – Ikaria, Therma Loutra [18], coppermine

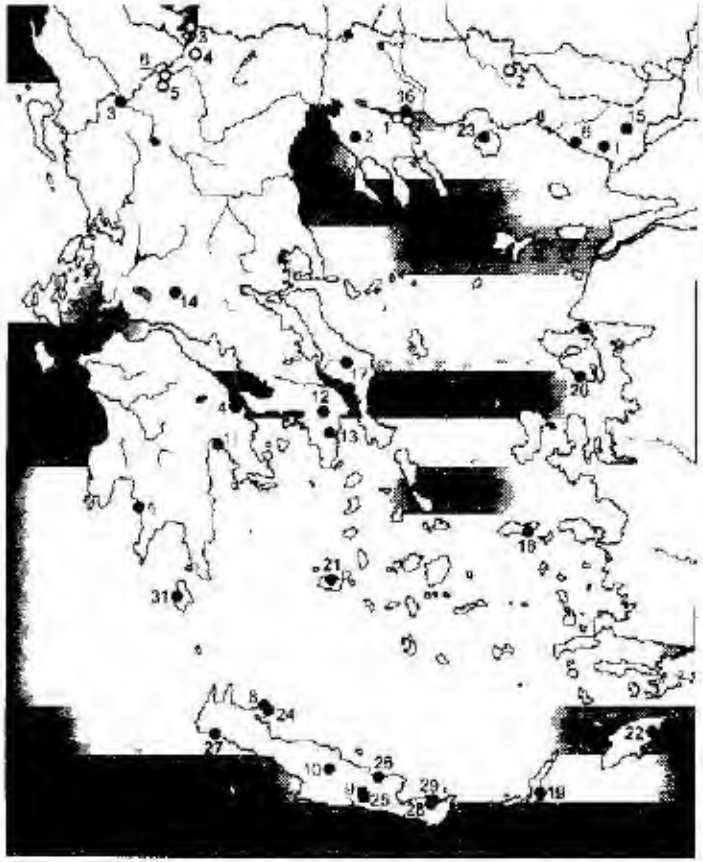

Fig. 6. Records of *Rhinolophus blasii* Peters, 1866 (closed symbols) and *Myotis daubentonii* (Kuhl, 1817) (open symbols) in Greece, for symbol explanations see Fig. 2

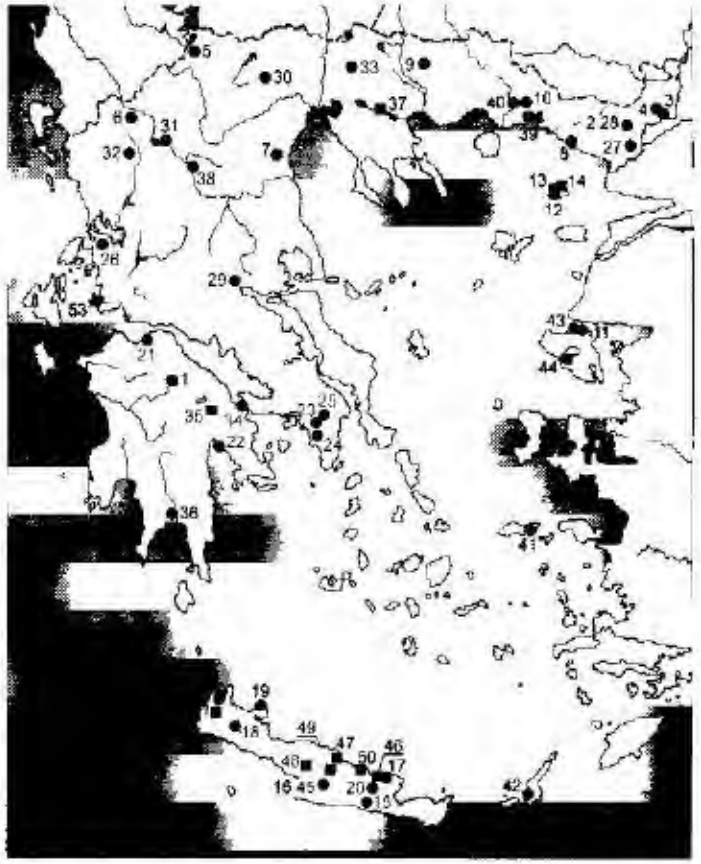

Fig. 7. Records of *Myotis blythii* (Tomes, 1857) in Greece, for symbol explanations see Fig. 2

Nealia, 17 June 1963 23m (Lasr & Duan 1964), – Karpathos, btw Aperi and Pigadhia (Kárpathos) [19] 4 April 1964, 19 April 1964 (Pieper 1965), – Lesvos, *Plomari* [20], 10m, 1♀ (Iliopoulou-Georgudaki 1986) – Milos [21] (Lataste 1885, Doria 1887) – Rhodes [= Rodos] Afandou [= Afandou] [22], cave (DeBeaux 1929), Thassos Sotir [23], 4m, 1♂ (Iliopoulou-Georgudaki 1977) – Crete Aghios Ioannis [= Agios Ioannou] (Akrotiri pen.) [24], cave 13–14 March 1965 5 ind (Martens 1967), – Ano Viannos [= Ano Viannos] [25], 2 ind (from owl pellets) (Pieper 1977), – Milo [= Milatos] [26] (Doria 1887), – Palaiochora [= Paleohora] [27], gallery, 19 March 1965 25 ind (Martens 1967) – Piskokefalo [28], cave, 22–23 March 1958 colony (coll 3♂) (Kahmann 1959) – Sitia [29] 1 ind (Felten et al 1977) – Ionian Is Petala [= Petalas] [30], cave, 17 July 1956 4m 1♂ (Lanza 1957) Insel Petala (Krystufek & Dulic 2001) – Kythira [= Kithira], Hohle Mylopotamos [= Milopotamos] [31] 5–6 March 1965 11 ind (Martens 1967)

Rhinolophus sp. (medium sized)
Records. **Published data** Attiki Piraeas Nymphis Kouvara [= Kouvaras], cave 27 Jan. 1954 group (Strinati 1955)

Distributional status (Fig. 6) The few records scattered in various parts of Greece, include Crete and several other Aegean and Ionian islands. This suggests that the species is potentially present all over the territory, even if evidence is still lacking from extensive areas, above all from Thessaly. Helversen (in Mitchell-Jones et al. 1999) adds data mainly from northern Macedonia. The continuous range of the species in the south of the Balkans is confirmed by records made in Albania, the Rep. of Macedonia, Bulgaria, and Turkish Trace. Apparently, *R. blasii* is another uncommon and strictly cavernicolous species. External and cranial dimensions of examined specimens of *R. blasii* from Greece are shown in Tab. 1.

Myotis myotis (Borkhausen, 1797)

Records. **Original data** Ahaia Kastria, Limnon cave [1] 17 May 1974 2ma 9fa (MHNG 1713.029–039 [S+A]) 1–2 August 2000 net 4m 16f – Evros Koufovouno [2] cave 21 June 1994 obs colony 50 ind., 22 July 2000 capt. 2m – Halkidiki Petralona [3] cave 5–8 Oct. 2000 det. several ind. of *M. cf. myotis* – Ioannina Ioannina Limni Pamvotis lake, Pantelemon I. [4], 22 April 1996 net several ind. – Kastoria Krya Nera [5], river, 4 Sept. 2001 net 1ma (NMP 49047 [S+A]) Pieria Prionia [6], waterfall in 1100 m a. s. l., 17 Sept. 1988 net 1fs (NMP 48558 [S+B], cf. Benda & Horaček 1995) – Rodopi Maronia [7] Cave of the Cyclops Polyphemos 15 April 1992 obs. colony (exam. 2m, 3f), 25 July 2000 capt. 7m 13 f (coll. 1fs, MHNG 1807.042 [S+A]) – Serres Agios Ioannis Prodromos [8] cave Pelade 17 July 2000 8m, 12f (coll. 1ma 2ms MHNG 1807.046–048 [S+A]) – Viotia Arahova [9], Corycian cave, 31 July 2000 capt. 1m Xanthi Kimmeria [10] gallery, 16 June 1989 net 2ma 1f (NMP 48619 [S] 48620 [S+B] cf. Benda & Horacek 1995) 23 June 1989 obs. colony ca. 1000 ind. net 4ma (NMP 48673 48675–48677 [S+B] cf. Benda & Horaček 1995) 20 July 2000 capt. 6m, 14f (coll. 1fL, MHNG 1807.043 [S+A]) – Aegean Is. Lesvos Agios Isidoros [11] cave 12 Sept. 2000 net 2ma (MHNG 1807.094, 1807.095 [S+A]) Lesvos Vassilika [12] ancient mine 5.5 km E 13 Sept. 2000 net 1m 6f (coll. 1fa, MHNG 1808.003 [S+A]) – **Published data** Ahaia Kastriae [= Kastria] [1] Limnon cave 17 May 1974 9m 12f (Iliopoulou-Georgudaki 1986 Iliopoulou-Georgudaki & Giagia 1984) – Patras [= Patra] [13] 10 June 1908 (Hopkins & Rotschild 1956) – Argolida Kephalari [= Kefalari] [14] n. Argos, cave 29 April 1952, 3 ind. (Peus 1954) – Attiki-Piraeas Dekelon [= Dekelia] [15] (as *Vespertilio murinus*, Winge 1881, rev. Pieper 1978) – Evros cave Bouba Lefkimis (n. Lefkimmi) [16] 24 July 1997 (Ivanova 2000) – Dadia Forest Reserve [17] (Adamakopoulos et al. 1995) – Provatonas river (n. Provato) [18], cave, 21 July 1997 net 1m (Ivanova 2000) – Fokida Itea [19] mandible fragment (from owl pellets) (Niethammer 1974) – Imathia Naoussa [20], grotte de l'Apano Scala resp. Scola 24 May 1954 (Lindberg 1955 Aellen 1955) – Ioannina Ioannina [= Ioannina] [21] 15 Sept. 1963 2 ind. (Kock 1974 Felten et al. 1977) – Kilkis Kilkis [22] cave Sarada Kamares 3 Sept. 1973 1m 7f (Iliopoulou-Georgudaki 1977, Iliopoulou-Georgudaki & Giagia 1984) – Kozani Ermakia [23] cave, 11 Oct. 1973 2m 2f (Iliopoulou-Georgudaki 1977 Iliopoulou-Georgudaki & Giagia 1984) – Serres cave of Alistrati [24] 9 Oct. 1978 and 22 Sept. 1986 7m 1f (Spitzenberger 1996) – Saint-Jean le Prodrome [= Agios Ioannis Prodromos] [8] grotte Pelade 6 May 1954 [4fa (MHNG 1713.089–091 [S+A])] (Lindberg 1955 Aellen 1955), cave Ioannou Prodromou resp. Serres 1 June 1973 6m 3f (Ilopoulou-Georgudaki 1977 Ilopoulou-Georgudaki & Giagia 1984) – Viotia "Jurkgrotte der Bielshohle bei Rubeland vom Parnass [= Parnassos Mts.] [25] (Bau 1929) – Xanthi Kimmeria [10] gallery, 16 May 1954 [1m (MHNG 1713.074 [S+A])] (Lindberg 1955), –

Toxotai resp Toxotei [= Toxotes] [26], railway tunnel 2 km NW 20 (resp 21) Sept 1966 2m, 1f (Spitzenberger 1996 et Hurka 1972) – Aegean Is Kos [27] (Pieper 1977) – Lesvos Polihnitos resp Polychnitos [28], 13 April 1980 3m (Iliopoulou-Georgudaki & Gragia 1984, Iliopoulou-Georgudaki 1986) – Ionian Is Korfu [= Kerkira] Ag Mathaeos [= Agia Matheos] [29] 2 ind (from owl pellets) (Niethammer 1962), – Korfu [= Kerkira] Ruglades [30] 1m (Niethammer 1962) – Morea [= Peloponissos] (no exact loc) (as *Vespertilio murinus*, Keyserling & Blasius 1839, Blasius 1857) – Griechenland (no exact loc) (as *Vespertilio murinus*, Blasius 1857, Kolenati 1859)

DISTRIBUTIONAL STATUS (Fig 8) Our current knowledge based on sparse records in Greece suggest that the Balkan range of this species comprises the whole territory, incl its offshore islands (Corfu, Lesvos, and Kos) Autentified data are missing from Crete since an old mention by Bate (1905) was in fact reidentified by Miller (1912) as *M oxygnathus* (= *M blythii*) In view of the relatively good knowledge of the large bat fauna of that island, we can confidently admit that *M myotis* does not occur on Crete (contra Guttinger et al 2001), the same conclusion has already presented by Pieper (1977) Obviously, the present knowledge of the distribution of this species in Greece can serve to precisely define the southern limit of its range in the Balkans even though it may be expected to be found on additional offshore islands in the Ionian and/or Aegean seas The available records document both the occurrence of single individuals and the presence of large nursery colonies located, as a rule, in underground spaces (caves, galleries) In mainland Greece, *M myotis* is apparently among the fairly common bat species External and cranial dimensions of examined specimens of *M myotis* from Greece are shown in Tab 2

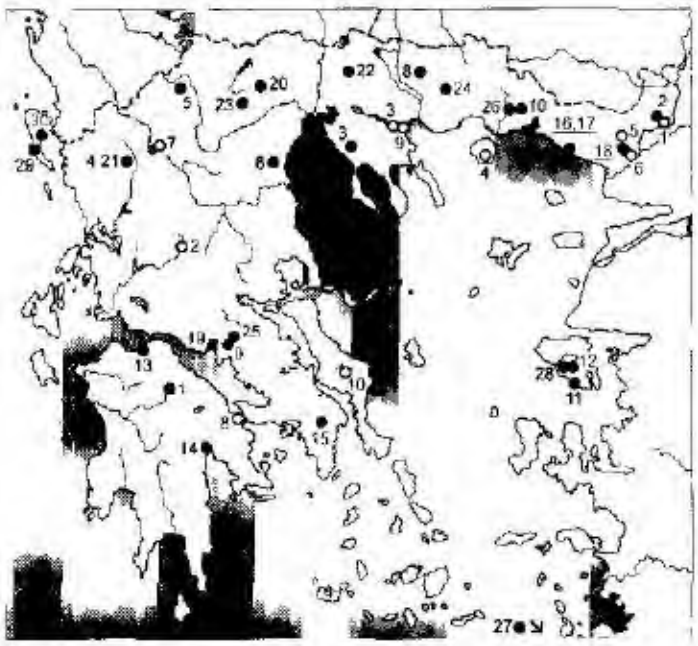

Fig 8 Records of *Myotis myotis* (Borkhausen, 1797) (closed symbols) and *Nyctalus noctula* (Schreber, 1774) (open symbols) in Greece for symbol explanations see Fig 2

Tab. 2. External and cranial dimensions of examined specimens of genus *Myotis* Kaup, 1829 from Greece. For abbreviations see text.

No.	locality	sex	LC	LCd	LAt	LA	LTr	G	LC1	LCb	LaZ	Lal	LaN	AN	CC	M¹M³	CM³	LMd	ACo	CM1
Myotis myotis																				
NMP 48558	Prionia	f	70	57	61.2	27.0	14.0	28.0	23.25	22.63	15.13	4.79	9.82	8.13	6.35	10.08	10.07	18.30	6.15	10.97
NMP 48619	Kammeria	m	75	55	60.2	25.2	14.0	26.5	23.86	22.80	15.06	5.02	9.82	8.13	6.41	9.96	10.32	18.17	5.88	10.98
NMP 48620	Kammeria	m	79	57	60.2	24.5	14.0	30.0	24.48	22.96	15.39	5.28	10.04	8.64	6.37	10.05	10.11	18.53	6.17	10.83
NMP 48673	Kammeria	m	75	56	61.8	27.0	13.0	30.0	24.43	23.47	15.32	5.31	10.20	8.32	6.28	10.18	10.47	18.82	6.42	11.12
NMP 48675	Kammeria	m	74	55	58.0	25.0	13.0	28.0	23.44	22.20	14.85	5.36	9.72	8.14	6.11	9.65	9.54	17.75	5.72	10.32
NMP 48676	Kammeria	m	74	52	60.0	27.0	14.0	30.0	23.91	22.93	15.21	4.94	9.80	8.27	6.49	10.24	10.43	18.30	6.21	11.27
NMP 48677	Kammeria	m	68	55	62.5	26.5	14.0	30.0	24.38	23.07	15.16	5.01	9.84	8.04	6.42	10.17	10.26	18.68	6.03	11.07
NMP 49047	Kria Nera	m	81	61	61.6	28.9	10.8	26.6	24.20	23.37	15.37	5.19	10.37	8.30	6.47	9.83	10.42	18.42	6.30	11.22
Myotis blythi																				
NMP 48559	Prionia	f	68	60	60.0	22.0	11.0	23.0	21.13	20.25	13.40	5.03	9.17	7.52	5.65	8.60	8.83	16.16	4.98	9.52
NMP 48580	Pappigo	–	70	61	59.8	22.5	11.0	29.0	22.33	20.92	14.02	4.96	9.72	8.02	5.82	9.09	9.24	16.75	5.33	9.95
NMP 48617	Kammeria	m	73	69	57.3	21.0	11.0	27.0	21.97	21.10	14.02	5.03	9.70	7.59	5.97	9.17	9.13	16.98	5.30	9.82
NMP 48618	Kammeria	m	73	62	57.4	23.0	12.5	22.0	22.04	21.00	13.92	5.23	9.52	7.27	5.75	8.88	8.85	16.63	5.34	9.59
NMP 48621	Kammeria	m	73	62	56.8	20.0	11.0	25.5	21.64	20.48	14.02	4.92	9.48	7.86	5.40	8.82	8.90	16.55	5.07	9.50
NMP 48627	Kammeria	f	68	57	56.9	22.3	13.0	26.0	20.94	20.03	13.74	4.92	9.50	7.52	5.72	9.02	8.92	15.96	4.93	9.57
NMP 48671	Didimotiho	m	68	56	53.6	21.0	11.0	24.0	20.93	20.20	13.75	5.32	9.76	7.46	5.43	8.62	8.94	16.17	5.20	9.59
NMP 48674	Kammeria	m	73	59	56.8	21.5	12.5	26.0	20.88	20.14	14.08	5.07	9.54	7.82	5.84	9.32	8.87	16.24	5.57	9.50
Myotis bechsteini																				
NMP 49018	Spathari	f	53	45	41.5	26.3	10.2	9.1	17.61	16.32	10.72	4.22	8.25	6.25	4.28	7.21	7.15	12.63	4.13	7.59
Myotis nattereri																				
NMP 48560	Prionia	m	50	42	39.7	16.0	13.0	8.5	15.52	14.66	–	3.88	7.88	5.62	4.09	6.47	5.92	11.32	3.30	6.37
NMP 48581	Pappigo	m	45	42	40.2	16.5	11.5	7.5	15.62	14.73	9.83	3.71	7.72	5.69	3.92	6.25	6.08	11.42	3.28	6.42
NMP 49019	Vrsiki	m	51	45	37.6	17.2	10.2	6.5	15.38	14.52	9.72	3.73	7.82	5.77	4.03	6.70	6.28	11.26	3.33	6.43
NMP 49020	Vrsiki	m	51	44	39.4	16.0	10.9	6.3	16.18	14.88	10.24	3.72	7.93	5.72	4.20	6.52	6.23	11.41	3.50	6.62
NMP 49024	Mistras	f	49	47	40.5	18.3	9.9	7.0	16.43	15.22	10.47	3.98	8.14	5.74	4.03	6.63	6.25	11.92	3.49	6.54
NMP 49027	Mistras	f	52	45	41.1	17.8	11.0	6.4	16.17	15.13	10.18	3.82	8.07	5.48	4.20	6.47	6.32	11.78	3.52	6.82

Tab. 2 continuation

No.	locality	sex	LC	LCd	LAt	LA	LTr	G	LCr	LCb	LaZ	Lal	LaN	AN	CC	M	M'	CM'	LMd	ACo	CM$_1$
Myotis nattereri (continuation)																					
WIC 1/64	Akrata	f	–	–	–	–	–	–	13 43	14 45	10 15	4 00	7 85	5 66	4 27	6 45	6 01	11 40	–		6 05
WIC 2/64	Akrata	f	–	–	–	–	–	–	16 38	15 09	10 20	4 00	8 13	5 70	4 30	6 50	6 27	13 92	–		6 70
WIC 3/64	Akrata	f	–	–	–	–	–	–	15 73	14 97	9 80	3 65	7 60	5 57	3 90	5 47	6 21	11 47	–		6 60
WIC 4/64	Akrata	f	–	–	–	–	–	–	15 20	14 25	10 05	3 79	7 68	5 38	4 13	6 47	6 15	11 37	–		6 50
WIC 5/64	Akrata	f	–	–	–	–	–	–	15 72	14 95	9 92	3 80	7 57	5 45	4 00	6 40	6 40	11 55	–		6 70
WIC 6/64	Akrata	f	–	–	–	–	–	–	15 77	14 65	9 74	3 78	7 67	5 42	4 10	6 45	6 20	11 62	–		6 60
WIC 7/64	Akrata	f	–	–	–	–	–	–	16 12	14 90	10 10	3 83	7 77	5 48	4 05	6 60	6 40	12 00	–		6 65
WIC 8/64	Akrata	f	–	–	–	–	–	–	15 80	14 72	10 05	3 77	7 85	5 54	4 15	6 75	6 14	11 54	–		6 47
WIC 9/64	Akrata	f	–	–	–	–	–	–	16 20	14 92	–	3 85	7 81	5 62	4 09	6 52	6 20	11 20	–		6 37
WIC 10/64	Akrata	f	–	–	–	–	–	–	15 95	14 97	10 14	3 65	7 91	5 52	3 98	6 51	6 36	11 58	–		6 75
WIC 11/64	Akrata	f	–	–	–	–	–	–	13 48	14 57	9 85	3 72	7 74	5 43	4 07	6 54	6 19	11 30	–		6 55
WIC 12/64	Akrata	f	–	–	–	–	–	–	15 90	14 70	9 84	3 77	7 93	5 52	4 10	6 58	6 30	11 57	–		6 76
WIC 13/64	Akrata	f	–	–	–	–	–	–	15 96	14 72	10 50	4 13	8 18	5 73	4 18	6 80	6 22	11 65	–		6 40
WIC 14/64	Akrata	f	–	–	–	–	–	–	15 58	14 53	10 00	3 87	7 23	5 34	4 00	6 34	6 20	11 30	–		6 40
WIC 15/64	Akrata	f	–	–	–	–	–	–	15 64	14 61	10 50	3 95	8 07	5 77	4 27	6 55	6 17	11 57	–		6 50
WIC 1/71	Mistras	–	–	–	–	–	–	–	15 45	14 45	10 12	4 13	7 80	5 65	4 09	6 32	6 13	11 30	–		6 60
WIC 2/71	Mistras	–	–	–	–	–	–	–	16 14	14 83	–	3 85	7 90	5 63	4 00	6 47	6 37	11 50	–		6 66
WIC 3/71	Mistras	–	–	–	–	–	–	–	15 96	14 90	10 30	3 84	8 00	5 79	4 11	6 50	6 38	11 53	–		6 70
Myotis emarginatus																					
NMP 48630	Xanthi	f	52	44	39 0	16 0	9 0	9 5	15 78	15 00	9 73	3 60	7 43	5 88	4 08	5 98	6 35	11 68	3 43		6 82
NMW 31359	Petralona	f	–	–	–	–	–	–	15 77	15 03	9 70	3 48	7 30	5 95	4 10	6 15	6 27	11 87	3 53		6 73
NMW 31360	Petralona	f	–	–	39 9	16 4	8 8	–	15 65	14 93	10 12	3 65	7 58	5 78	4 03	6 25	6 35	11 75	3 58		6 77
NMW 31361	Petralona	f	–	–	40 7	17 0	8 4	–	16 23	15 50	10 00	3 65	7 62	6 03	4 25	6 35	6 63	12 13	3 58		7 17
NMW 31362	Petralona	f	–	–	40 7	16 5	8 8	–	15 97	14 93	9 90	3 75	7 52	5 72	4 20	6 27	6 47	11 82	3 58		6 85
NMW 31363	Petralona	f	–	–	–	–	–	–	15 68	14 95	10 08	3 43	7 48	5 63	3 93	6 42	6 37	11 80	3 47		6 87
NMW 31364	Petralona	f	–	–	–	–	–	–	15 55	14 80	9 98	3 65	7 38	5 82	–	6 35	6 38	11 60	3 42		6 83
NMW 31365	Petralona	f	–	–	41 0	16 9	8 7	–	16 10	15 23	10 10	3 55	7 40	5 85	4 08	6 28	6 47	11 82	3 57		6 80
NMW 31366	Petralona	f	–	–	41 3	17 2	8 4	–	16 28	15 35	9 93	3 68	7 40	5 87	4 08	6 22	6 45	12 33	3 53		6 78
NMW 31367	Petralona	f	–	–	40 3	18 2	9 0	–	16 15	15 20	10 07	3 52	7 30	6 05	4 27	6 43	6 43	12 03	3 67		6 85

Tab. 2 (continuation)

No	locality	sex	LC	LCd	LAt	LA	LTr	G	LCr	LCb	LaZ	Lai	LaN	AN	CC	M M	CM'	I Md	ACo	CM$_3$
Myotis emarginatus (continuation)																				
NMW 31368	Petralona	f	–	–	39.5	16.7	8.9	–	15.68	14.87	10.05	3.58	7.63	5.85	4.20	6.32	6.30	11.67	3.65	6.65
NMW 31369	Petralona	f	–	–	40.2	15.9	8.7	–	15.43	14.35	9.53	3.35	7.17	5.78	4.02	5.92	6.12	11.40	3.32	6.50
NMW 31370	Petralona	f	–	–	41.1	18.2	–	7.0	16.18	15.35	9.90	3.53	7.32	5.85	3.98	6.22	6.48	11.92	3.58	6.88
NMW 31371	Petralona	f	–	–	40.4	16.2	8.7	–	15.85	15.15	9.83	3.52	7.53	5.95	3.95	6.25	6.42	11.85	3.57	6.78
NMW 31372	Petralona	f	–	–	39.5	17.4	9.4	–	15.77	15.13	9.62	3.47	7.23	5.67	4.02	6.32	6.43	11.78	3.55	6.88
NMW 31373	Petralona	f	–	–	38.7	16.7	8.7	–	15.68	15.03	9.82	3.55	7.40	5.77	4.17	6.38	6.43	11.87	3.53	6.88
NMW 31374	Petralona	f	–	–	–	17.4	–	7.5	15.90	15.07	9.70	3.63	7.37	5.95	4.25	6.32	6.40	11.80	3.60	6.87
NMW 31375	Petralona	f	–	–	–	17.1	–	6.5	15.67	14.85	9.55	3.55	7.35	5.90	–	6.87	6.25	11.55	3.35	6.73
NMW 31376	Petralona	f	–	–	42.3	17.3	8.0	–	15.73	15.07	9.83	3.55	7.42	5.72	4.07	6.15	6.35	11.62	3.53	6.82
NMW 31377	Petralona	f	–	–	39.9	16.6	–	7.5	16.33	15.52	10.22	3.90	7.62	5.97	4.27	6.47	6.50	11.95	3.67	6.90
NMW 31378	Petralona	f	–	–	40.5	15.6	9.4	–	15.78	15.02	9.83	3.55	7.33	5.85	–	6.32	6.48	11.72	3.40	6.83
NMW 31379	Petralona	f	–	–	42.1	16.1	8.6	–	16.45	15.47	9.75	3.65	7.45	5.82	4.17	6.27	6.43	12.25	3.50	6.88
NMW 31380	Petralona	f	–	–	40.4	17.4	–	6.5	15.92	15.15	9.80	3.68	7.55	5.62	4.02	6.25	6.40	11.92	3.65	6.87
NMW 31381	Petralona	f	–	–	–	18.0	–	7.5	16.60	15.95	10.10	3.62	7.42	5.95	4.35	6.28	6.75	12.52	3.70	7.10
NMW 31382	Petralona	f	–	–	40.5	16.8	9.8	–	15.55	14.88	9.63	3.60	7.13	5.82	4.07	6.15	6.42	11.65	3.43	6.83
NMW 31383	Petralona	f	–	–	–	16.8	–	7.5	15.97	15.07	9.67	3.55	7.30	5.58	3.87	6.15	6.37	11.88	3.42	6.75
NMW 31384	Petralona	f	–	–	–	18.0	–	7.5	16.47	15.80	10.07	3.50	7.53	6.02	4.15	6.30	6.75	12.40	3.70	7.05
NMW 31385	Petralona	f	–	–	39.8	17.4	–	6.0	15.68	15.02	9.38	3.43	7.05	5.85	3.65	6.05	6.25	11.58	3.55	6.77
NMW 31386	Petralona	f	–	–	40.8	17.1	–	6.5	15.93	15.07	9.75	3.50	7.55	5.98	3.95	6.10	6.42	11.68	3.62	6.75
NMW 35454	Delfi	m	–	–	38.4	–	–	–	15.37	14.72	9.62	3.55	7.13	5.72	4.02	6.22	6.22	11.42	3.42	6.45
NMW 35455	Delfi	m	–	–	38.8	–	–	–	15.55	14.62	9.42	3.40	7.25	5.40	3.97	6.05	6.33	11.52	3.53	6.80
NMW 45753	Stavros	f	–	–	42.1	16.0	8.7	–	15.52	14.65	9.75	3.47	7.23	5.68	–	6.00	6.32	11.80	3.42	6.80
NMW 45754	Stavros	f	–	–	40.4	16.4	9.1	–	16.20	15.45	9.95	3.58	7.35	5.73	4.02	6.12	6.63	12.27	3.80	7.00
NMW 45755	Stavros	f	–	–	41.8	15.9	8.3	–	–	–	9.65	3.35	–	5.55	3.93	6.28	6.45	11.93	3.20	6.85
NMW 45756	Stavros	f	–	–	40.6	16.8	9.4	–	–	15.60	10.25	3.72	7.65	5.90	4.25	6.60	6.60	12.20	3.68	6.93
NMW 45757	Stavrós	f	–	–	40.3	16.9	9.1	–	15.87	15.02	–	3.67	7.45	6.02	4.05	6.20	6.32	11.82	3.50	6.70
NMW 45758	Stavros	f	–	–	40.5	15.6	8.3	–	16.37	15.62	–	3.52	7.45	5.98	4.08	6.30	6.53	12.40	3.63	7.10
NMW 45759	Stavros	f	–	–	39.6	17.2	9.2	–	15.77	14.92	–	3.77	7.48	5.82	4.12	6.40	6.32	11.75	3.25	6.75
NMW 45760	Stavros	f	–	–	41.8	16.8	8.3	–	16.28	–	10.18	3.53	7.63	–	4.27	6.53	6.72	12.17	3.60	7.05
Myotis cf. *mystacinus*																				
NMP 48514	Ormilia	m	4.1	–	35.0	13.0	8.0	4.5	13.82	13.05	8.30	3.22	6.68	4.63	3.22	5.07	5.25	9.70	2.77	5.65

Tab. 2 continuation

No	locality	sex	LC	LCd	LAt	LA	LTr	G	LCr	LCb	LaZ	LaI	LaN	AN	CC	M¹M³	CM¹	LMd	ACo	CM₃
Myotis aurascens																				
NMP 48345	Stavros CR	m	–	–	33.8	–	–	–	13.68	13.28	8.12	3.40	6.60	4.77	3.15	5.13	5.17	9.77	2.63	5.50
NMP 48346	Sparti	f	49	45	36.1	15.0	7.7	6.6	14.18	13.48	8.58	3.40	6.57	4.92	3.43	5.45	5.17	10.28	2.95	5.62
NMP 48512	Ormulia	f	44	45	35.6	13.3	8.0	5.0	13.82	13.17	8.75	3.38	6.97	4.97	3.57	5.52	5.05	9.82	2.77	5.50
NMP 48513	Ormulia	f	47	36	34.9	14.0	9.5	5.9	13.90	13.13	8.62	3.45	6.82	5.15	3.53	5.43	5.28	9.80	2.78	5.73
NMP 48515	Ormulia	f	47	39	36.6	14.0	9.0	5.7	13.92	13.23	8.32	3.28	6.65	4.85	3.48	5.48	5.17	9.87	2.77	5.88
NMP 48516	Prioma	f	43	40	35.2	14.0	8.5	5.5	14.03	13.28	8.46	3.23	6.69	4.88	3.40	5.57	5.28	9.98	2.67	5.67
NMP 48517	Metamorfossi	f	42	39	35.0	13.2	6.3	–	13.93	13.15	–	3.43	6.66	4.88	3.33	5.47	5.12	9.75	2.80	5.63
NMP 49017	Sitopoulo	f	46	43	34.9	15.0	7.1	5.3	14.32	13.48	8.50	3.32	6.79	4.94	3.57	5.52	5.43	10.18	2.92	5.88
NMP 49044	Papagiannis	m	51	42	35.6	15.9	8.1	5.1	14.49	13.65	8.52	3.28	6.92	5.13	3.58	5.61	5.74	10.08	2.92	5.77
NMP 51477	Stoupa	f	–	–	35.5	–	–	–	14.07	13.42	8.52	3.40	6.62	4.76	3.53	5.53	5.18	10.10	2.88	5.63
Myotis dasycneme																				
NMP 48552	Rendina	f	44	45	36.0	–	–	9.5	13.79	13.40	8.68	3.98	7.80	5.22	3.77	5.72	4.92	9.82	3.00	5.45
Myotis capaccinii																				
NMP 48582	Kleidonia	m	51	42	40.8	15.0	7.0	9.5	15.47	–	–	3.60	7.95	–	3.87	5.97	5.64	10.98	2.74	6.00
NMP 48583	Kleidonia	m	52	41	40.7	14.5	9.0	10.5	15.35	14.30	9.60	3.58	8.00	5.76	3.97	6.12	5.61	10.88	2.95	5.92
NMP 48584	Kleidonia	f	51	42	40.7	15.0	9.0	10.5	15.43	14.15	9.52	3.65	8.05	5.84	3.95	6.02	5.53	10.71	2.96	5.92
NMP 48616	Kleidonia	m	–	–	–	–	–	–	15.32	14.47	9.16	3.53	7.91	5.70	3.78	5.90	5.65	10.82	2.98	5.97
NMP 48626	Kimmeria	f	56	44	42.7	15.0	8.0	10.0	15.66	14.93	9.41	3.48	8.08	5.73	4.00	6.25	5.82	10.80	2.86	6.04
NMP 48647	Maronia	f	52	41	42.2	14.8	8.0	10.5	15.86	14.85	9.60	3.58	8.06	5.66	3.97	6.12	5.87	10.79	2.98	6.02
NMP 48648	Maronia	f	51	43	42.3	14.5	9.0	9.5	15.25	14.29	9.47	3.62	7.85	5.58	3.85	6.06	5.64	11.31	3.04	6.22
NMP 48649	Maronia	f	56	43	42.4	14.5	8.0	10.5	15.72	14.88	9.80	3.70	8.16	5.81	3.94	6.17	5.90	11.07	2.90	6.08
NMP 48650	Maronia	f	55	46	42.3	14.0	9.0	10.5	15.74	14.83	–	3.63	8.10	5.62	4.02	6.47	5.81	11.02	2.96	6.12
NMP 48658	Didimotiho	f	54	39	42.4	15.5	7.5	9.0	15.58	–	9.25	3.73	7.86	6.02	3.83	5.98	5.72	10.92	2.98	6.07
NMP 48659	Didimotiho	f	53	39	42.1	13.5	8.0	10.6	15.93	14.77	9.83	3.71	8.19	5.75	4.02	6.12	5.77	11.13	2.92	6.17
NMP 48661	Didimotiho	f	56	43	42.2	14.0	7.5	10.0	15.98	–	–	3.62	8.22	6.12	4.02	6.27	5.84	11.17	2.95	6.24
NMP 48662	Didimotiho	f	53	42	41.5	13.5	7.5	9.0	15.55	14.48	9.45	3.54	7.82	5.73	3.92	6.15	5.88	10.85	2.98	6.19
NMP 48663	Didimotiho	f	51	42	43.4	15.0	7.0	9.5	15.88	14.66	9.47	3.68	8.08	5.79	3.96	6.10	5.80	–	–	–
NMP 48664	Didimotiho	f	54	43	41.6	15.0	7.5	10.0	15.43	14.54	9.55	3.52	7.88	5.65	3.99	6.18	5.73	10.97	2.88	6.07
NMP 49048	Kria Nera	m	56	42	41.6	15.5	7.2	9.0	15.45	14.52	9.67	3.72	7.96	5.75	3.98	6.24	5.65	10.77	2.87	5.97

Myotis blythii (Tomes, 1857)

Records **Original data** Achaia: Kastria, Limnon cave [1], 17 May 1974 7fa (MHNG 1713.040–066 [S+A]), 1–2 August 2000 net 4m, 2f – Évros Dadia [2], Tsoutsourou, galleries, 24 July 2000 41 obs (cf Ivanova 2000). Didimotiho [3], cave 2 km W, 23 June 1989 net 1ma (NMP 48671 [S+B]). – Koufovouno [4], 23 June 1989 obs colony, 22 July 2000 3m, 1f, 24 s i (cf Ivanova 2000) – Flórina, Vathýri [5], 2 km E, 12 July 2000 net 13 ind – Ioánnina Papigo [6], cave, 26 Sept 1988 net 1f (NMP 48580 [S]). – Preveá Parga [7], waterfall in 1100 m a s l, 17 Sept 1988 net 1fa (NMP 48559 [S+B]) – Rodopi Maronia [8], Cave the Cyclops Polyphemos, 25 July 2000 obs colony – Serres Agios Ioannis Prodromos [9], cave Pelade, 7 July 2000 net 2m, 3f, above river, 17 July 2000 net 1fs (MHNG 1807.031 [S+A]) – Xanthi Kimméria [10] gallery, 16 June 1989 3ma (NMP 48617, 48618, 48621, 48627 [S+B]), 23 June 1989 net 1ma (NMP 48[illegible] [S+B]), 20 July 2000 capt 15 ind – Aegean Is Lesvos, Efthalou [11], ancient mine 4 km E, 14 Sept 200[illegible] net 1fa, found 1 mummy (MHNG 1807.099 [S+A], 1807.100 [S+humerus]). – Samothráki, Hora (= Samothráki) [12], cave, 10 July 1994 net 7ma. – Samothráki, Lákkoma [13], cavern, 14–16 July 1994 obs ca. 25[illegible] Samothráki, Paleópoli [14], 28 Sept 1996 remains of 5 ind in *Tyto alba* pellets (leg V Vohralík & D Fenu)

Crete Ano Viannos [15], Mt Kato cave, August 1999 coll 4fa (MHNG 1807.068, 1807.069, 1807.[illegible] 1808.006 [S+A]). Gortis [16], labyrinth, 4 ind (ZIN, cf Strelkov 1972); Milatos [17], cave, 12 May 195[illegible] 2ma, 1fa (MHNG 1713.081–083 [S+A]), – Omalos [18], water cave, 5 August 1971 5ma, 1fa (WIC 1390–[illegible] cave, 12 July 1995 net 1ma, 1faNL, 2 ind, – Stavros (Akrotiri pen.) [19], cave 1, 10 July 1995 net 6ma, 2[illegible] Tzermiado [20], 18 July 1995 det 2 ind – **Published data** Achaia Limnon cave [1], 1 Oct. 1967 1m, 1[illegible] May 1974 3m, 24f (Iliopoulou-Georgudaki 1984, 1986), – Patras [= Patra] [21], 2f (Miller 1912) Argolis Nauplia [= Nafplio] [22], 1 ind (Miller 1912) – Attiki - Piraeus Athens [= Athina], Ethnikos Kipos A'Nekrotafeio [23], 1992–1995 detected calls (Legakis et al 2000), – Athens [= Athina], Skopeftirio Kessariani, Alsos Pangration, Arditos [24], 1992–1995 detected calls (Legakis et al 2000), – Dekelia [= Dekeleia] [25] (Pieper 1978, cf Winge 1881) – Etolia Akarnania Horion Monastiraki, resp Monastiraki [= Monastiráki] [26], 3 June 1964 3m, 2f (Iliopoulou-Georgudaki 1977, 1984) – Evros Didymoteicho [= Didimotiho] [3], cave 3 km WNW, 22 June 1963 (Hurka 1972, cf Spitzenberger 1996), Didimotichon, 3 Aug[illegible] 1971 ca 800 ind (Niethammer 1974, Kock 1974), Didymoticho, 12 Sept 1990 1 ind (from owl pellet) (Vohralík & Sofianidou 1992). – Kouvobono [= Koufovouno] [4], cave, 8–9 June 1965 (Hurka 1972), near Kouvobono, 22 June 1963 2m, 6f (Spitzenberger 1996, cf Hurka 1972). Provatonas river (= Provatol[illegible]) cave, 21 July 1997 net 5m (Ivanova 2000), gallery Saint Barbara I (= Dadia) [28], 19 July 1997 2m, obs ca 8 ind (Ivanova 2000) – Fthiotida Lamia [29], 1 ind (Miller 1912) – Imathia Naoussa [30], Apano[illegible] cave, 24 May 1954 12m (MHNG 1713.095, 1713.096 [S+A])] (Lindberg 1955) – Ioannina Milia [= Milia] [31], N P Vikos-Aoos, Zesto Rema, July 1985 obs (Tsunis 1987), – Joannina [= Ioannina] [32], 1 ind (Felten et al 1977) – Kilkis Kilkis [33], cave Saranta Kamares (resp Saranta Camares), 3 Sept 1973 1f (Iliopoulou-Georgudaki 1977, 1984) Korintia Corinth [= Korinthos] [34], 7 ind (5m) (Miller 1912). – Nemea [35] 3 August 1971 mandible (from owl pellets) (Niethammer 1974) – Lakonia Elomohori, resp Elomocheion [36], 20 June 1966 64f (Iliopoulou-Georgudaki 1977, 1979, 1984, 1986) – Serres Saint-Jean-le-Prodrome [= Agios Ioannis Prodromos] [9], grotte Pelade, 6 May 1954 [2m (MHNG 1713.093, 1713.094 [S+A])] (Lindberg 1955, Aellen 1955) – Thessaloniki Nimfopetra [= Nimfopetra] [37], 5 May 1977 3 ind (from owl pellets) (Pieper 1978) – Trikala Meteora [38], 1 ind (Felten et al 1977) – Xanthi Mándra [39], 1m, 5, 28 Sept 1966 4m (Spitzenberger 1996, cf Hurka 1972), – Kimmeria [10], galleries, 16 May 1954 [2m, 1[illegible] (MHNG 1711.070–072 [S+A])] (Lindberg 1955). Kimmèria, 1 km SE, 27 Sept 1966 (Kock 1974), – Toxotes resp Toxotei [= Toxotes] [40], railway tunnel 2 km NW, 20 (resp 21) Sept 1966 7f (Spitzenberger 1996, Hurka 1972) – Aegean Is Ikaria, Therma Loutra [41], coppermine Neatia, 17 June 1963 1f (Lanz & Dan 1964), – Karpathos, Finiki [= Forniki] [42], 18 June 1935 1m (Wettstein 1941). Karpathos, 17 April 19[illegible] (Martens 1967), – Lesvos, Mithimna, resp Mithymna [43], cave, 1 July 1965 27m, 65f (Iliopoulou-Georgudaki 1977, 1984, 1986), – Lesvos, Polichnitos [= Polichnitos] [44], old mine tunnel, 14 April 1980 1f (Iliopoulou-Georgudaki 1984), 1m (Iliopoulou-Georgudaki 1986), – Samothraca [= Samothraki], Lakoma [= Lákkoma] [12] cave, 17 August 1984 1m (Cruciitu 1987, 1988) – Crete Haghia Dekka [= Agios Deka] [45], Labyrinth, cave (3m, 1f) (Miller 1912, cf Bate 1905), Ai Deka [= Ágios Deka], 22 ind (Pohle 1953), cave Mikro Lavyrinthi (resp Micro Lavyrinthaki), 8 August 1973 15m, 18f (Iliopoulou-Georgudaki 1977, 1979, 1984), – Ag. Pnevma [46], 5 ind (from owl pellets) (Pieper 1977), – Alones [47], 5 ind (from owl pellets) (Pieper 1977); – Ano Viannos [= Áno Viannos] [15], 25 ind (from owl pellets) (Pieper 1977), – Gortys [= Gortis] [16], 1 ind (from owl pellet) (Pohle 1953), cf Gortys, August and Oct 1942, 4 ind (from owl pellets) (Uttendorfer 1942); – Platania [48] 3 ind (from owl pellets) (Pieper 1977), Sarchos [= Sarhos] [49], 5 ind (from owl pellets) (Pieper 1977), Skotino [= Skotinó] [50], 5 ind (from owl pellets) (Pieper 1977); – Topolia [51], 21 ind (from owl pellet

(Pieper 1977). – Ionian Is.: **Korfu** [= Kerkira], Ag. Matheos [= Agía Matheos] [52], mm. 2 ind. (from owl pellets) (Niethammer 1962); – **Petala** [= Petalas] [53], cave, 17 July 1956, 3m (Lanza 1957).

DISTRIBUTIONAL STATUS (Fig. 7). The relatively numerous records suggest that this is probably one of the most frequent bat species in Greece, distributed throughout mainland Greece. It is also found on Crete and some Ionian and Aegean islands. Apparently, this is a strictly cavernicolous species, with numerous nursery colonies (sometimes mixed with other species) being confined to rather large caves or man-made underground spaces, including ancient ruins, especially at lower altitudes (the highest record lying ca. 1300 m a. s. l.: Tsunis 1987). External and cranial dimensions of examined specimens of *M. blythii* from mainland Greece are shown in Tab. 2.

TAXONOMIC NOTE. The Greek populations of the *M. myotis-blythii* complex have been evaluated several times. Within a wider taxonomic context the Greek populations were evaluated for the first time by Strelkov (1972) who defined two forms inhabiting the territory of Greece, viz., *M. blythii oxygnathus* (Monticelli, 1885) (terra typica: Matera, S Italy) occupying mainland Greece, and *M. blythii omari* Thomas, 1906 (t. l.: Derbent, central Iran) on Crete. His conclusions have been confirmed by Topál (1971) and Felten et al. (1977) in their analyses. The presence of *M. b. omari* on Crete has been further confirmed by Iliopoulou-Georgudaki (1979). Later, Iliopoulou-Georgudaki (1984) presented a detailed analysis of the population of this species in the whole of Greece. She confirmed the subspecific division of *M. b. oxygnathus* from *M. b. omari*. Moreover, she described the insular population from Lesvos Island as being different, and thus named it *M. blythii lesviacus* Iliopoulou, 1984 (t. l.: Mithymna, Lesvos; loc. No. 43). However, the justification of that form was later questioned (Benda & Horáček 1995a, b, Arlettaz et al. 1997, Topál & Ruedi 2001) as the variation range of cranial dimensions of bats from Lesvos fits with that found in central and south-eastern European populations (see Benda 1996). While there is no doubt that the Lesvos population does not deserve the taxonomic status of a subspecies, some authors do accept it without further comments; see Koopman (1994) and Topál (in Mitchell-Jones et al. 1999). The two subspecies are separately listed in this contribution, the form *M. b. omari* including findings from Crete, and the form *M. b. oxygnathus* comprising all mainland ones. It is obvious that some of the records contained in the literature cannot be as unequivocally separated and that the subspecific status of some of the insular populations is unclear from this point of view (particularly in the Dodecannese group); after measurements given by Laar & Daan (1964), the specimen obtained on Ikaria Island can belong to *M. b. omari*.

Myotis bechsteinii (Kuhl, 1817)

RECORDS. **Original datum**: Arkadia: Spátharis [1], creek 4 km S, 24 August 2001, net, 1fa (NMP 49018 [S+A]). – **Published data**: Drama: Paranestion [= Paranesti] [2], Loutra Therma, 20 June 1987, net, 1fa (Helversen & Weid 1990). – Ioannina: betw. Vouliasta and Panagia [3], Louros river, bunker, 7 August 1976, 3f, 3j, 11 August 1979: nurs. colony, 3f, 2j (Helversen & Weid 1990). – Kardítsa: Loutropigi [4], creek valley, 19 May 1989, 1f (Helversen & Weid 1990). – Kastoriá: Gavros [5], Ladopotamos river, 17 August 1988, net, 1m (Helversen & Weid 1990). – Preveza: Kleisoura [= Klissoúra] [6], 1978, 1 ind. (Volleth 1987). – Thessaloniki: Rendina [7], Volvi-See [= Limni Volvi lake], plane-tree wood, 17 August 1985, net, 1m (Helversen & Weid 1990). – Stavros [8], creek in plane-tree wood NW, 10 Sept. 1983, net, 1f (Helversen & Weid 1990).

DISTRIBUTIONAL STATUS (Fig. 9). The presence of *M. bechsteinii* in the Greek territory has been demonstrated by Helversen & Weid (1990) by six records in northern and central Greece. Our record from Arcadia has expanded the known distribution of this species in Greece down to the Peloponnese. These localities complete the hitherto observations from Albania (Uhrin et al. 1996), southern Bulgaria (Hanák & Josifov 1959, Horáček et al. 1974) and Turkish Trace (Kahmann 1962,

Benda & Horaček 1998), and thus changes considerably the southern limit of its distribution in the Balkans. However, this is not so surprizing, judging from similar records from southern Turkey (Helversen 1989b), Sicily and southern Iberia (Mitchell-Jones et al. 1999). Thus *M. bechsteini* is distributed discontinuously down to southern Europe, yet its distribution may be more patchy in its southernmost parts. As shown by Ibañez et al. (1992), in Iberia this species occurs in the mountains of the southernmost part of the Mediterranean Region. The records in Greece origin from the valleys of warm woodlands, from seashores up to higher altitudes (Rhodopes Mts.). A nursery colony was found in an abandoned building in Epirus (Helversen & Weid 1990). The occurrence of this species on Greek islands is hardly probable in view of its habitat preference in mainland Greece. External and cranial dimensions of examined specimen of *M. bechsteini* from Greece are shown in Tab. 2.

Myotis nattereri (Kuhl, 1817)

Records. **Original data.** Arkadia: Viziki [1], road bridge 1 km S, 25 August 2001, coll. 2ma, 1fa, male display (NMP 49019, 49020 [S+A]). – Evros: Kirki [2], river 6 km E (Avantas gorge), 21 July 2000, net, 1ma (MHNG 1807.049 [S+A]). – Ioannina: Papigo [3], cave, 26 Sept. 1988, net, 1m (NMP 48581 [S+B]). – Korinthia: Arhea Korinthos, Akrokorinthos [4], castle ruins, 30 August 2001, obs. 1 ind. – Lakonia: Mistras [5], ruins of Byzantine town, 27 August 2001, obs. two small colonies, both of 4 ind., and 1 ind. (probably male display), 2fa, NMP 49024, 49027 [S+A]), 2fs, NMP 49025, 49026 [A]). – Pieria: Prionia [6], waterfall in 1100 m a.s.l., 17 Sept. 1988, net, 1ms (NMP 48560 [S+B]). – **Published data.** Achaia: Akrata [7], rocky crevice, 9 Aug. 1964, colony (coll. 15fa) [WIC 1328–342 = 1–15/64] (Horaček & Hanak 1984, Helversen & Weid 1990; the locality name was misprinted by Benda & Horaček 1995 as "Ackas"). – Florina: Psarades [8], Prespa Sea, Limni Megali Prespa lake], cave, 3 August 1988, 2f (Helversen & Weid 1990). – Kastoria: "Bergsee Buchenwald unterhalb" Mt. Epano Arena [9], Grammos Mts., 24 August 1987, net, 1m (Helversen & Weid 1990). – Lakonia: Mistras [5], 20 August 1971, 2m, 1f [WIC 1345–347 = 1–3/71] (Helversen & Weid 1989; Benda & Horaček 1995). – Thessaloniki: Stavros [10], plane-tree wood, rock crevice, 5 April 1983, 1m (Hickau & Weid 1990). – Ionian Is.: Korfu [= Kerkira], Ag. Mathaeos [= Agia Matheos] [11], 1 ind. (from owl pellet) (Niethammer 1962).

Distributional status (Fig. 11). The occurrence of this species in Greece has been demonstrated for the first time by a find of bones in pellets of *Tyto alba* on Corfu (Niethammer 1962) and by subsequent records by W. Issel (see Hanak & Horaček 1984, Helversen & Weid 1990). Our current records from Greece, together with data from Bulgaria (Horaček et al. 1974), Albania (Uhrin 1996), Rep. of Macedonia (Kryštufek et al. 1998), and Turkish Thrace (Benda & Horaček 1998) have considerably completed the picture of distribution of *M. nattereri* in the Balkans. As expected, the species occurs throughout mainland Greece incl. the Peloponnese, except for Corfu. The species has not yet been documented on islands but its occurrence on some of the offshore ones is probable. The hitherto available data do not permit to evaluate the abundance of this species in Greece, but it appears to be rather scarce but widespread (among the more common cavity species) in that region. It is a species of broad ecological requirements, occurring in the Mediterranean in most diverse habitat types. External and cranial dimensions of examined specimens of *M. nattereri* from Greece are shown in Tab. 2.

Myotis emarginatus (Geoffroy, 1806)

Records. **Original data.** Fokida: Delfi [1], Corycian Grotta, 7 August 1979, 2m (NMW 35454, 35455 ♂♂). – Halkidiki: Petralona [2], cave, 3 June 1977, 2ff (NMW 31359–31386 [S, S+B, S+A]). – Serres: Agios Ioannis Prodromos [3], river n. monastery, 17 July 2000, net, 1fa (MHNG 1807.040 [S+A]). – Thessaloniki: Loutra Thermis [4], 1f (MA). – Stavros [5], bunker galleries, 12 July 1979, 8f (NMW 45753–45756 [S+A] ex U. Passauer). – Xanthi: Xanthi, road 8 km NW [6], 17 June 1989, 1fa, 1s (NMP 48630 [S+B]). – Cretan Is. [7], 12 August 1971, 1fa (WIC 31608). – Amoudara [8], canyon, terraces, of 1 ind. in an owl pellet. – **Published**

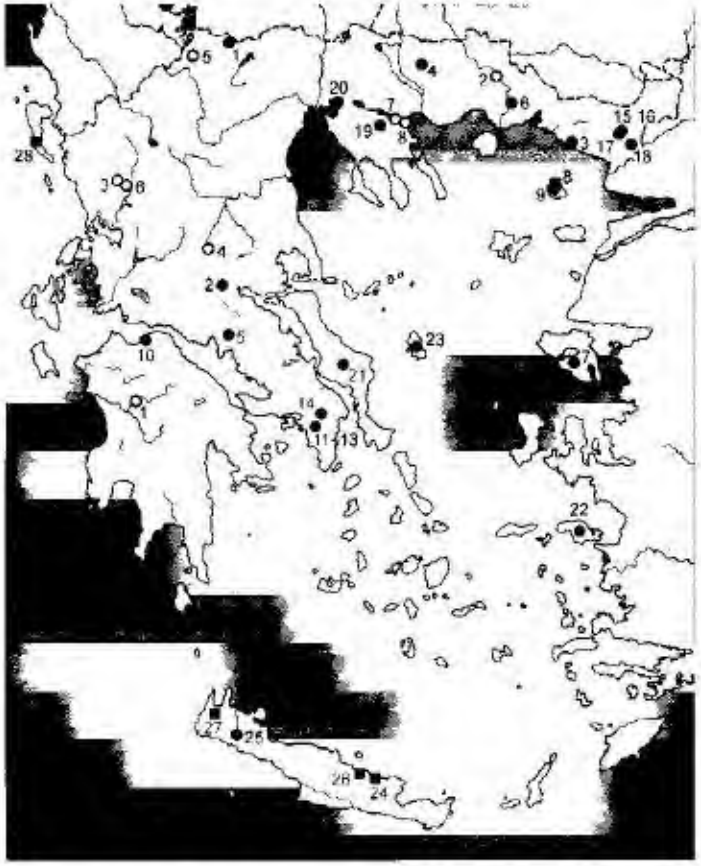

Fig. 9. Records of *Myotis bechsteinii* (Kuhl, 1817) (open symbols) and *Eptesicus serotinus* (Schreber, 1774) (closed symbols) in Greece, for symbol explanations see Fig. 2.

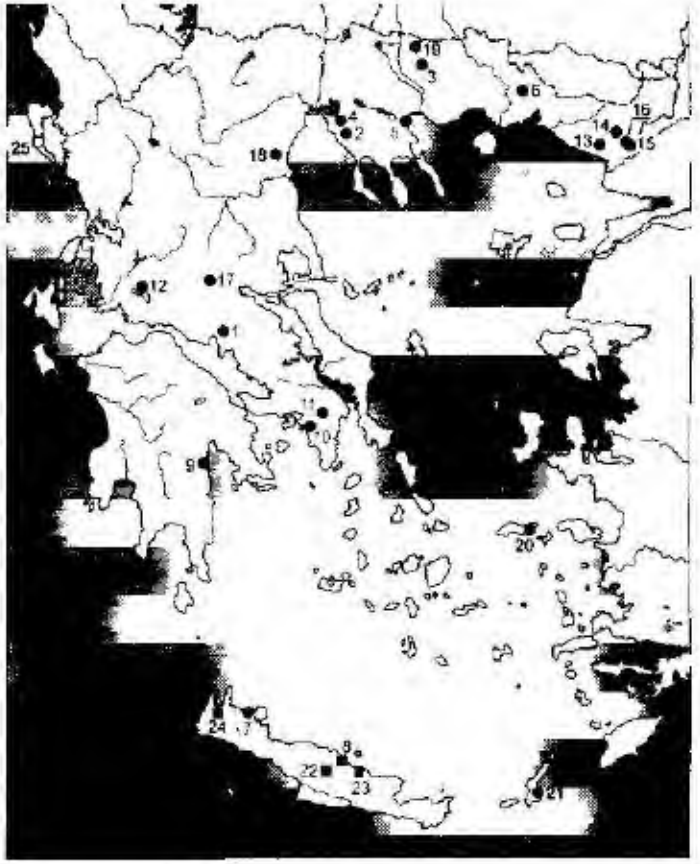

Fig. 10. Records of *Myotis emarginatus* (Geoffroy, 1806) in Greece, for symbol explanations see Fig. 2, the open symbol denotes doubtful record (No. 25).

data. Argolida Néa Hora [9], Kinouria, Agia Eléousa, 5f, 6j (= nursery colony) (Iliopoulou-Georgudaki 1977) – Attiki – Piraiás Athens [= Athina], Akti Kountourioti, Profitis Ilias, Studio Eirinis & Filias [10], 1995 detected calls (Legakis at al. 2000), – Dekelion [= Dekeleia] [11], 1m (as *Vespertilio discolor*) (Krauß 1881) – Etolia Akarnania Paravola (n Agrinio) [12], 19 April 1972, 1f (Iliopoulou-Georgudaki 1977) – Évros Avadas [= Avas] [13], cave, 21f (Iliopoulou-Georgudaki 1977), – cave Kamila (n Dadiá) [14], 2000 1997 not 1fL (Ivanova 2000), – Provatóna [= Provato] [15], n Lefkímmi, cave, 28 July 1987 1f (Crucitti 1988) Provatonas river (n Provato) [16], 17 July 1997 1m, 1f (Ivanova 2000), – Ftiotida Spata [17], Anemotrypa 1j (Iliopoulou-Georgudaki 1977), – Halkidiki Petralona [2], 25 May 1962 (Kanellis & Halzsaranton 1967) – Pieria Monastery of St. Dionysios [= Agios Dionissios] [18], Spring 1931 1fa (in a colony of *R. ferrumequinum*) (Ellsworth-Musters 1932) – Sérres Milosavrakhi [19], 15 km NE Sidirókastro, cave 1000 ft, 11 Nov 1954 [1 ind. (MHNG 1711.080 [A])] (Lindberg 1955) – Thessaloniki Kato Stavros [5], 1986 1 ind. (Helversen et al. 2001) Aegean Is Ikaria, Therma Loutra [20], coppermine Nealia, 17 June 1963 1fLact (Daan & Daan 1964), – Karpathos [21] (Pieper 1977) Crete Sarchos [= Sárhos] [22], 2 ind. (from owl pellets) (Pieper 1977), Skotino [= Skotenio] [23], 1 ind. (from owl pellets) (Pieper 1977), – Topólia [24], 6 ind. (from owl pellets) (Pieper 1977) – Ionian Is Kerkira [= Kerkura], Ag. Mathaeos [= Agia Matheos] [25], 1 ind. (from owl pellets) (Niethammer 1962, nevertheless, after description the record is apposite considered of *M. mystacinus*)

Distributional status (Fig. 10). So far the species has been documented by records from various parts of mainland Greece, Crete and other islands. While no data are available from some regions one may assume that the species is distributed all over the territory of Greece and is a rather common species, at least in the more humid northern regions, which would correspond with the situation known in the Balkans at present (cf. Mitchell-Jones et al. 1999). The records from Greece either document the occurrence of that species in caves (sometimes in mixed colonies with *R. ferrumequinum*) or results of nettings or finds in owl pellets.

Taxonomic note. Although the geographic variability of the Balkan populations of *M. emarginatus* has not been studied in sufficient detail, they can be ascribed to the nominotypical subspecies

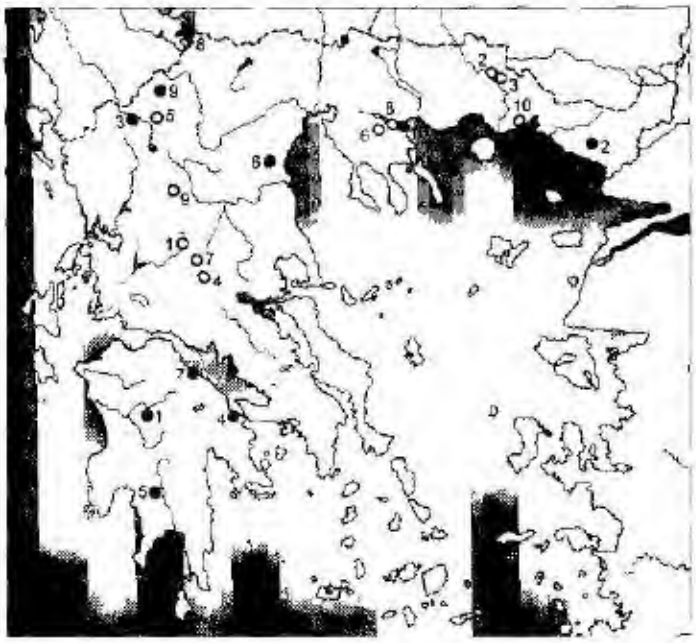

Fig. 11. Records of *Myotis nattereri* (Kuhl, 1817) (closed symbols) and *Nyctalus lasiopterus* (Schreber, 1780) (open symbols) in Greece; for symbol explanations see Fig. 2

M. e. emarginatus (Geoffroy, 1806) (terra typica: Charlemont, France). There are a number of opinions concerning the interspecific variability of this species, referring, above all, to the differences in its coloration (see Benda & Horáček 1998 for a review). For the mainland Greek population, Iliopoulou-Georgudaki (1977) has proposed a subspecific status ("*hellenicus*") although her consideration has never been formalised taxonomically. Since the geographic variability has never been analysed over the whole range of the species, no definitive conclusion can be drawn concerning the Greek populations. External and cranial dimensions of examined specimens of *M. emarginatus* from Greece are shown in Tab. 2.

Myotis mystacinus (Kuhl, 1817) s. l.

Records **Original data** Halkidiki: Halkidiki (no exact loc.), 28 May 1962, 2 ind. (MKB 77.37, 77.38, leg. Wolf), – Metamorfossi [1], river 5 km W, 26 Sept. 1988, net, 2f. – Ormilia [2], creek, 14 Sept. 1988, net, 1ms (NMP 48514 [S+B]) – Korinthia: Antikrion (= Riza) [3], rocky crevice, 19 August 1964, 1m (WIC H322) – Thessaloniki: Rendina, creek 2 km E [4], 12 Sept. 1988, net, 1f (NMP 48518 [B]) – **Published data**: Drama: Angiti [= Angitis] [5], 30 May 1983, 1 ind. (Helversen et al. 2001), – Arkoudoremma [6], 18 August 1997, 2 ind. (Helversen et al. 2001) – Evros: Lssimi [7], 21 August 1984, 1m (Crucitti 1987, 1988), – Makri [8], 2 km W, 2 Oct. 1966 (Hurka 1972) – Ioanina: Vrosina [= Vrossina] [9], 6 Sept. 1997, 1 ind. (Helversen et al. 2001) – Kastoriá: Ahlakmonas [10], 1m (Benda & Tsytsulina 2000) – Ionian Is.: Korfu [= Kérkira], Ag. Matheos [= Agia Matheos] [11], 1 ind. (from owl pellets) (Niethammer 1962) – Peloponnisos (no exact loc.), 1 ind. (Helversen et al. 2001)

Distributional status (Fig. 12). Since the hitherto records pertain to several taxa of this species (see Taxonomic note) which cannot be unequivocally determined in most cases, they cannot be used to determine the exact distributional status of some of the newly defined forms. However, considering the form *M. mystacinus* sensu lato, one may state that, concerning the number and density of the records, it corresponds with the situation known from the neighbouring Bulgaria (own data) or the Rep. of Macedonia (Kryštufek et al. 1992, 1998). External and cranial dimensions of examined specimens of bats from the *M. mystacinus* group from Greece are shown in Tab. 2.

The territory of Greece lies beyond the known range of *M. brandtii* (Eversmann, 1845). However, records of this species in the Balkans and, above all, in the Bulgarian part of the Rhodopes Mts. (Horáček et al. 1974, Ivanova 1998, Tvrtković et al., in press) suggest the probable occurrence of this woodland-inhabiting species in the adjacent mountain ranges in the north of Greece. Most probably, the southern limit of its distribution in the Balkans lies in approximately the same latitudes as that of *M. daubentonii* (cf. Mitchell-Jones et al. 1999, see below).

Taxonomic note. The *M. mystacinus* group has been recently thoroughly revised, and this revision has substantially altered our view of the systematics of the whole group in the western Palaearctic and particularly in the Balkans (Benda & Tsytsulina 2000, Helversen et al. 2001). These revisions have revealed the presence of four (instead of two) species of whiskered bats in south-eastern Europe, viz., *M. mystacinus* (Kuhl, 1817), *M. brandtii* (Eversmann, 1845), *M. aurascens* Kusjakin, 1935, and *M. alcathoe* Helversen et Heller, 2001. As stated above, the occurrence of *M. brandtii* in the territory of Greece has not yet been confirmed. But the occurrence of *M. aurascens* in Greece was first suggested by Voleth (1987) in three localities (*Myotis* sp. A), which was subsequently confirmed by Benda & Tsytsulina (2000); additional records of this species in Greece are given below.

According to our present knowledge, the other two forms, *M. mystacinus* and *M. alcathoe*, can hardly be separated on the basis of morphological characters but merely through cytogenetical and ultrasound characters. Helversen et al. (2001) reported four localities where *M. alcathoe* occurs in Greece (see below). Thus, records of *M. mystacinus* s. l., listed in this review, may either pertain to all three forms (viz., *M. mystacinus* s. str., *M. alcathoe*, *M. aurascens*) or to *M. mystacinus* s. str. or

M. alcathoe in the cases of museum specimens examined (see Fig. 12 and Tab. 2). For that reason, the present distribution of *M. mystacinus* s. str. in Greece or all over the Balkan Peninsula cannot be evaluated, as both *M. mystacinus* s. str. and *M. alcathoe* apparently inhabit the entire south-eastern Europe (see Helversen et al. 2001).

Myotis aurascens Kusjakin, 1935

Records. **Original data** Florina Papagiannis [1], river, 2 Sept 2001 net 1ma (NMP 49044 [S+A]). – Mt [2], 3 km E, 13 July 2000 net 1ma, 1fa (MHNG 1807.033, 1807.034 [S+A]). – Halkidiki Metamorfosi [3], river 5 km W, 26 Sept 1988 net 1ms (NMP 48517 [S], cf Benda & Tsytsulina 2000). – Ormilia [4], cave, 24 Sept. 1988 net 2fa, 1fs (NMP 48512, 48513, 48515 [S+B], cf Benda & Tsytsulina 2000). – Ilia Simopoulo [5], river 2 km W, 23 August 2001 net 1fs (NMP 49017 [S+A]). – Kilkis Milos [6], 1 km E, 15 July 2000 net 1ma (MHNG 1807.032 [S+A]). Lakonia Sparti [7], above the Evrotas river, 17 Sept 1996 net 1fs (NMP 48346 [S+A]). – Messinia Stoupa (n Kardamili) [8], 7 July 1991 1f (NMP 51477, leg Andéni Pierria Prioma [9], waterfall in 1100 m a. s. l., 12 Sept 1988 net 1fa (NMP 48516 [S+B], cf Benda & Tsytsulina 2000). – Thessaloniki Rendina [10], 1 km E, 28 July 2000 net 1ma, 1ms, 2fa, 1fs, 1f (coll 5 ind., MHNG 1807.035–039 [S+A]). – Crete Stavros (Akroturi pen.) [11], cave, 10 July 1995 net 1ma (NMP 48345). **Published data** Drama Arkoudorema river [12], 1m (Benda & Tsytsulina 2000). – Neglet [13], 1f (Benda & Tsytsulina 2000). – Halkidiki Gerakini [14], 1985 1f (Volleth 1987). – Marathoussa [15] 1 ind. (Benda & Tsytsulina 2000). Kastoria Gramos [16], 20 August 1982: 2m (Benda & Tsytsulina 2000, cf Helversen et al. 2001). – Nestorio [17], Aliakmonas river, 1f (Benda & Tsytsulina 2000, cf Volleth 1987). Pevkos [= Pefkos] [18], 1982 2m (Volleth 1987). – Kilkis Metalion [= Metalliko] [19], 1f (Benda & Tsytsulina 2000). – Pieria Nea Agathoupolis [20], 1981 1f (Volleth 1987).

Distributional status (Fig. 4). Since *M. aurascens* can be well distinguished from the remaining forms of the *M. mystacinus* group with aid of the morphological characters (Benda & Tsytsulina 2000), we revised museum specimens when possible. In the whole territory of Greece, 20 localities of *M. aurascens* have been successfully established on the grounds of that revised material. These records come only from the northernmost (Macedonia) and southernmost (Peloponnese, Crete) parts of Greece. This wide span, however, suggests that the species occurs throughout the territory of Greece, from seashores up to moderate elevations (Lake Prespa, ca. 850 m a. s. l., Olympus Mts., ca. 1100 m a. s. l.). As stated by Benda & Tsytsulina (2000), *M. aurascens* seems to be the most abundant form of the *M. mystacinus* group in the Balkans, co-occurring with the remaining species at a 2:1 ratio (or even 3:1 in some of the localities).

Myotis alcathoe Helversen et Heller, 2001

Records. **Published data:** Drama Nestos river [1], n Loutra Therma, 2 Sept 1997 1 ind. (Helversen et al. 2001). – Skaloti [2], Sept 1985 1m (Volleth 1987, Helversen et al. 2001). – Evritania Kleistos [= Klisti] [3], Fourmikos river, 14 August 1981 net 1ma (SMF 90249, holotype, Helversen et al. 2001, cf Volleth 1987). – Kardhitsa Loutropygi [= Loutropigi] [4], 5 June 1991 1 ind., 17 June 1992 nurs. colony (3fa 2j), net 5fa (paratype series; Helversen et al. 2001).

Distributional status (Fig. 12). Helversen et al. (2001) report the occurrence of this newly defined species in two localities in eastern Macedonia and two localities in central Greece. All these records come from mountain regions (Pindus Mts., Rhodopes Mts.), suggesting that *M. alcathoe* may not be a strictly Mediterranean element, as can be concluded from the regions in which it has been discovered, and that it might occur even in more northern regions of the Balkans (two genetically confirmed records from the mountains in the north of Hungary, see Helversen et al. 2001). According to Helversen et al. (2001), *M. alcathoe* inhabits, in Greece, narrow humid valleys grown with dense vegetation and with the presence of streams; the only maternity colony was found in a fissure in a plane-tree trunk.

Myotis daubentonii (Kuhl, 1817)

Records **Original datum** Thessaloniki: Rendina [1], creek 2 km E, 12 Sept. 1988, net, 1fs (NMP 48552 [S+B]), 1 km E, 28 July 2000, net, 2ma (MHNG 1807.044, 1807.045 [S+A]). – **Published data** Dráma: Dipotamia [2], Arkouderema river, 30 August 1987, net, 1m, 2 Sept. 1987, net, 1m (Helversen & Weid 1990). – Florina: Psarades [3], Prespa-See [= Limni Megali Prespa lake], 15 and 18 August 1987, net, 2f, md., obs. hundreds md., cave, 3 and 14 August 1988, net, 42 md., obs. nurs. colony (Helversen & Weid 1990). Kastoria: Gavros [4], Ladopotamos river, 17 August 1988, net, 1m, 1f (Helversen & Weid 1990), "Bergsee im Buchenwald unterhalb" Mt. Epáno Arena [5], Grammos Mts., 24 August 1987, net, 1m (Helversen & Weid 1990). – Pevkos [= Péfkos] [6], Aliakmon [= Aliakmonas] river, 21 August 1982, net, 1m, 22 August 1987, net, 1m (Helversen & Weid 1990, cf. Volleth 1987, Bogdanowicz 1990). – Thessaloniki: plane-tree wood and creek between Rendina and Stavrós [1], 5 April 1983, obs., 13 days in 1983–1988, obs., net, several md. (Helversen & Weid 1990). – Kato Stavros [7], 1983, 2m, 1f (Volleth 1987), Stavros, 4 md. (Bogdanowicz 1990).

Distributional status (Fig. 6). Helversen & Weid (1990) have published the first six records of this species in Greece; our own ones only supplement their data. The species is distributed over the northern regions of Greece (Macedonia, Epirus) where it is found in woodland, near lakes and streams at various elevations (from the seashore up to mountain regions); it may be very abundant locally (environs of Prespa lakes, Lake Volvi). At the same time, the current records from Greece, together with those from south-eastern Albania (Uhrin et al. 1996), the Rep. of Macedonia (Kryštufek et al. 1992) and Turkish Thrace (Benda & Horáček 1998) serve to precise the known limit of the range of this species in the Balkans, which, along much the same latitude, continues further to the east in Turkey (Helversen 1989b, Benda & Horáček 1998). In line with this observation, Uhrin et al. (1996) suggest that the known trend of increased abundance of this species in Europe may be also apparent at the southern limit of its range, or may be due to a shift of its range forwards the south.

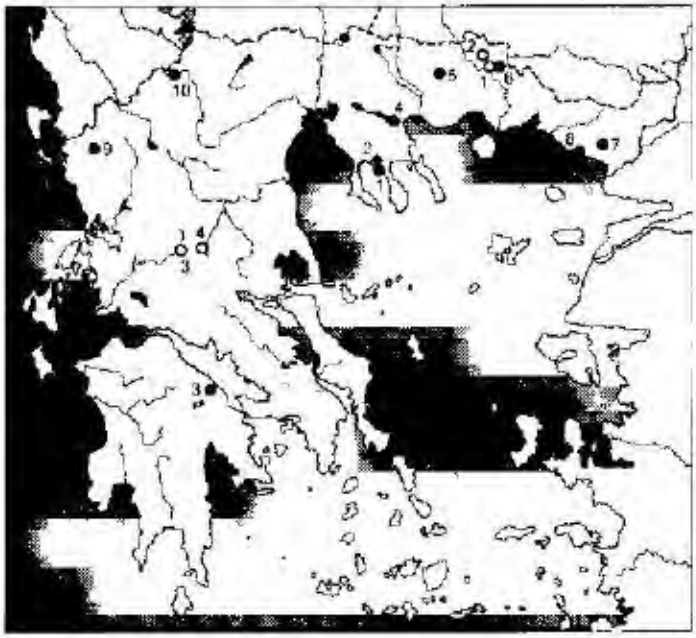

Fig. 12. Records of *Myotis mystacinus* (Kuhl, 1817) s. l. (closed circles), *M. alcathoe* Helversen et Heller, 2001 (open circles) and record of *M. mystacinus* s. str. or *M. alcathoe* (closed diamond) in Greece, for details see text.

This, however, can hardly be demonstrated due to the lack of historical data. External and cranial dimensions of examined specimen of *M. daubentonii* from Greece are shown in Tab. 2.

TAXONOMIC NOTE. The analyses of geographic variability of *M. daubentonii*, available so far (Hanak & Horaček 1984, Bogdanowicz 1990, 1994), have included the Balkan populations into the subspecies *M. d. daubentonii* (Kuhl, 1817) (terra typica: Hanau, Germany). Nevertheless, Bogdanowicz (1990) states that the populations inhabiting the Pindus Mts. exceed the general cline shifts in metrical characters in Europe from the south-west to the north-east (in agreement with Bergmann's rule), the specimens being larger than those from the neighbouring lowland populations. The same difference has been observed by Helversen (1989b) and Helversen & Weid (1990) who have completed the description of this species by showing differences in coloration (the mountain specimens being darker in colour than the lowland ones). Although the different phenotype and thus also the possible different status of the southern marginal populations of *M. daubentonii* had already been pointed out by Hanak & Horaček (1984), the situation has not yet been reliably analysed.

Myotis capaccinii (Bonaparte, 1837)

RECORDS. **Original data**: Achaia: Kastria, Limnon cave [1], 17 May 1974, 2m (MHNG 1711.055, 1711.056 [A]), 1–2 August 2000, net, 1m. – Evros: Dadia [2], Tsoutourou galleries, 24 July 2000, 15 ind., Didimotiko [3], cave, 22 June 1989, net, 1mj, 1fa, 5fl. (NMP 48658–48664 [S+B]), 21 June 1994, obs. 2 ind., 22 July '98, obs. colony. – Kirki [4], river 6 km E, 21 July 2000, net, 1m. – Grevena: Dimitra [5], a river 3 km E, 1 Sept. 2001, det. min. 1 ind. – Ioannina: Kleidonia [6], Voidomatis river, 27 Sept. 1988, net, 3ms, 1f (NMP 48582, 48584, 48616 [S+B]). – Kastoria: Kria Nera [7], river, 4 Sept. 2001, net, 1ma (NMP 49048 [S+B]). – Messinia: Tzanes [8], river 2 km NW, 26 August 2001, net, 1fs (NMP 49023 [A]). – Rodopi: Maronia, creek 2 km SW, 19 June 1989, net, 6ms, 4fa (NMP 48647–48656 [S+B]), Cave of the Cyclops Polyphemus, 3 July 2000, obs. colony. – Serres: Agios Ioannis Prodromos [10], cave, Pelade, 17 July 2000, capt. 1. – Xanthi: Kimmeria [11], gallery, 16 June 1989, net, 1 fa (NMP 48626 [S]), 20 July 2000, capt. 10 ind. (ind. fr. – Aegean Is.: Thassos, Skala Potamia [12], sea shore, 18 July 1994, det. 1 ind. of *M. cf. capaccinii*, Thassos, 1 ind. (MKB). – **Published data**: Etolia-Akarnania: Monastiraki [13], cave Somittou, 4m, 24f (Papadopoulou-Georgudaki 1977). – Evros: cave Bouba Lefkimis (n. Lefkimmi) [14], 24 July 1997, obs. nurs. colony of ca. 100 ind. (Ivanova 2000). – Diavolorema river (n. Dadia) [15], 22 July 1997, net, 1mj (Ivanova 2000). – Didimotichon, resp. Didimotichon [= Didimotiho] [3], cave, 3 July (August) 1971, ca. 100 ind. (Niethammer in Kock 1974); Didymotichon, 3 km WNW, 22 June 1963 (Hurka 1972). – Kouvobono [= Koufovouno] [16], ac. 8–9 June 1963 (Hurka 1972), cave Coufovouno, 23 July 1997, obs. nurs. colony of ca. 300 ind. (Ivanova 2000). – gallery Tsoutourou II (n. Dadia) [2], 22 July 1997, obs. nurs. colony of ca. 100 ind. (Ivanova 2000). – Ilia: Kataphas-See [= Katafas] [17], 6 July 1995, an ind. (Spitzenberger & Helversen 2001). – Imathia: Naoussa [18], Grotte de Paparados, resp. de Paparadon, 24 May 1954, 3f (MHNG 1711.001, 1711.002, 1711.077 [S]) (Lindberg 1955, Aellen 1955). – Lakonia: Githion [= Githio] [19] (Spitzenberger & Helversen 2001). – Serres: Levkon [= Lefkonas] [20], 1m (Papoulou-Georgudaki 1977). – Thessaloniki: Kato Sarros [21], 1983, 1m (Volleth 1987). – Aegean Is.: Samos [22] (Spitzenberger & Helversen 2001). – Thasos: Potagia [23], Drakotrypa cave, 16 July 1963, 1m (Lüer & Daan 1964). – Crete: Piskokefalo [24], 2 ½ 1960, 2 ind. (Kock 1974, cf. Kahmann & Caglar 1960). – Ionian Is.: Petala [= Petalas] [25], cave, 17 II 1956, 8m, 17f (Lanza 1957). – Thrazien (no exact loc.), 29 April 1973 (Kock 1974).

DISTRIBUTIONAL STATUS (Fig. 13). The records of this species from various parts of Greece incl. Crete presented above, are supplemented by those of Helversen (in Mitchell-Jones et al. 1999), above all, from Peloponnese, Epirus and eastern Macedonia. Thus, the whole of Greece incl. Crete can be considered to be a part of the range of this species. Records from the north of Greece (Epirus, Macedonia) make a continuity those from Albania, the Rep. of Macedonia, Bulgaria, and Turkish Thrace (Uhrin et al. 1996, Kryštufek et al. 1992, Benda & Horáček 1998, own data), altogether, they bring important knowledge of the distribution of this little known bat species in the Balkan region. Consequently, the range of this species reaches farther to the north up to Slovenia, Croatia, Serbia and to the south of Romania (Mitchell-Jones et al. 1999). At the same time, *M. capaccinii* is sympatric with the ecologically similar species, *M. daubentonii*, in a zone at least 500 km wide in

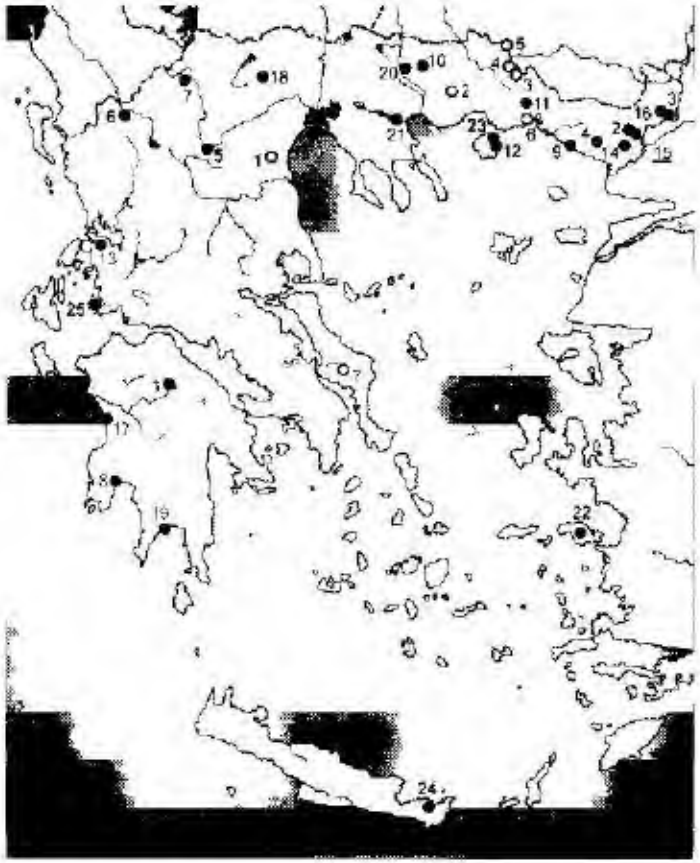

Fig. 13 Records of *Myotus capaccinii* (Bonaparte, 1837) (closed symbols) and *Vespertilio murinus* Linnaeus, 1758 (open symbols) in Greece, for symbol explanations see Fig. 2

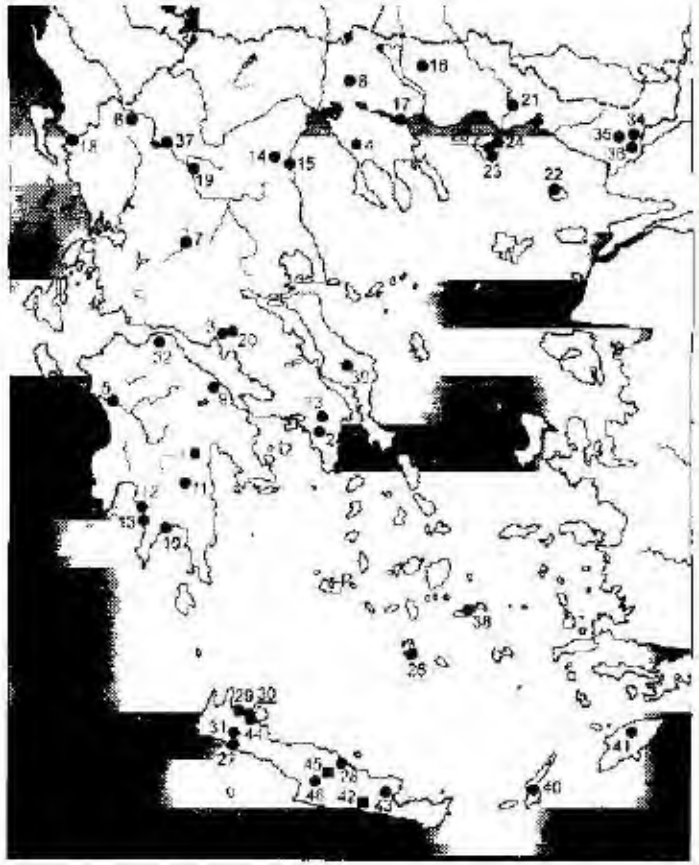

Fig. 14 Records of *Hypsugo savii* (Bonaparte, 1837) in Greece, for symbol explanations see Fig. 2

Greece, at least, in Epirus, Macedonia and Thrace). *M. capaccinii* posseses a typical Mediterranean distribution (S Europe, Turkey, the Near East, NW Africa). According to our experience, *M. capaccinii* is in Greece a strictly cavernicolous species that forms relatively large colonies (both nursery and wintering), often mixed together with other bat species (*Rhinolophus* spp., *Miniopterus schreibersii*, large *Myotis* ssp., etc.). For example in the cave near Didimotiho (Thrace). External and cranial dimensions of examined specimens of *M. capaccinii* from Greece are shown in Tab. 2.

TAXONOMIC NOTE. Some recent authors, e.g. Koopman (1994) and Guillén (in Mitchell-Jones et al. 1999) acknowledge the validity of the subspecies *M. capaccinii bureschi* (Heinrich, 1936) (terra typica: Karamlek, Strandja Mts., SE Bulgaria) for the populations inhabiting the eastern part of the range, from the Balkans down to Mesopotamia. This form, however, shows no metric differences from the nominotypical one (see Albayrak 1990) and its status is based on a different coloration of its pelage (the specimens from the eastern populations being described as paler in colour). Validity of these differences as well as the metric ones, however, should be revised over the whole range of this species. Until then, we prefer to include the Balkan population in the nominotypical subspecies, *M. c. capaccinii* (see Corbet 1978, Spitzenberger & Helversen 2001).

Vespertilio murinus Linnaeus, 1758

RECORDS **Original data**: Pieria Prionia [1], waterfall in 1100 m a. s. l., 17 Sept. 1988: net, 1m (NMP 48557 [S+B]). – **Published data**: Drama Angitis river [2], 13 km SW of Drama, 2–3 Sept. 1984, net, 2m (Weid 1988, cf. Volleth 1987). – E of Dipotama [3], 400–1400 m a. s. l., 1987, det. & obs. on 4 places (Weid 1988). – E of Livadhus [4], 1200–1400 m a. s. l., 1986, det. & obs. on 6 places (Weid 1988). – Kentriki-Rodopi range [5], 1984, det. & obs. on 4 places (Weid 1988). – Xánthi Mondra, resp. Mandra [= Mundra] [6], 27 Sept. 1966, 1f (Iliopoulou-Georgudaki 1977, Weid 1988). – Aegean Is. Euboea [= Evia] [7] (as *Meteorus dasycnemus* Lindermayer 1855, Kolenati 1859).

DISTRIBUTIONAL STATUS (Fig. 13). The occurrence of this species in the Balkans was long considered doubtful (Laar & Daan 1964, Pieper 1966) although there was an old report of Lindermayer (1855) from Euboea Island as well as a more recent one from the present territory of the Rep. of Macedonia (Karaman 1931). The doubts have not been removed until the findings made in Bulgaria (Hanák & Josifov 1959) and new Greek records by Bauer and later also by Weid (Iliopoulou-Georgudaki 1977, Weid 1988), supplemented by our own autumn record from the Olympus Mts. (1100 m a. s. l.). External and cranial dimensions of examined specimen of *V. murinus* from Greece are shown in Tab. 3.

Thus the present review of records from Greece seems to confirm the regular occurrence of *V. murinus* in the Greek Rodopi Mts. as well as the presence of occasional individuals in central Greece (Olympus Mts., Euboea Is.). In particular, its fairly common occurrence in woodland landscape in the Greek Rhodopes Mts. connects with similar localities in the south of Bulgaria and integrates records at similar latitudes in the Rep. of Macedonia (Kryštufek et al. 1992), Albania (Uhrin et al. 1996) and Turkey (Benda & Horáček 1998). Since all known records have been made in autumn and the species is known to be among those performing long-distance migrations, it appears more correct to interpret all available records as migrations from more northern populations to their hibernacula in the south (see Strelkov 1997a, b), or as the permanent occurrence of males south of breeding areas (cf. our find of a large summer colony of males in the roof panelling of a gamekeeper's lodge in the Pirin Mts., Bulgaria, in ca. 1230 m a. s. l., on 10 July, 1976). However, one cannot rule out a permanent population and reproduction of the species in the wooded areas in northern Greece.

Eptesicus serotinus (Schreber, 1774)

RECORDS **Original data**: Flórina Papagiannis [1], river, 2 Sept. 2001, det. min. 2 ind. – Ethnikó Parkó Kombotades [2], above the Sperhias river, 9 Sept. 1996, net, 1fa (NMP 48723 [S+A]). – Rodopi Maróna [3]

creek 2 km SW, 19 June 1989, 1ma (NMP 48646 [SJ]) – Sérres: Agios Ioannis Prodromos [4], river n monastery, 17 July 2000: net, 1m. – Vrotia: Arákhova [5], Corycian cave, 31 July 2000: net, 3m (coll. 1ma, MHNG 1807.065 [S+A]). – Xanthi: Galani [6], cave, 23 June 1989: net, 9fG (NMP 48679–48687 [S+B]). – Aegean Is.: Lesvos, Vassilika [7], ancient mine 5.5 km E, 13 Sept. 2000: net, 1ma (MHNG 1808.004 [S+A]); – Samothráki, Paleópoli [8], 28 Sept. 1996: remains of 5 ind. in *Tyto alba* pellets (leg. V. Vohralík & D. Frynta); – Samothráki, Therma [9], 13 July 1994: det. 1 ind. – **Published data**: Ahaia: Patras [= Patra] [10], 10f, 4 ind. (Müller 1912), 5 June 1908 (Hopkins & Rotschild 1956). – Attiki-Piraeas: Athens [= Athína], Skopeftirio Kasarianis, Aksos Pangratiou, Arditos [11], 1992–1995: detected calls (Legakis et al. 2000). – Athens [= Athína], Polemiko Mouseio, Zappeio, Evangelismos [12], 1992–1995: detected calls (Legakis et al. 2000). – n Athens [= Athína] [13], 1f (Müller 1912). – Dekelion [= Dekéleia] [14], 3m, 1f (Winge 1881). – Évros: Dadia Forest Reserve [15] (Adamakopoulos et al. 1995). – Diavoloremа river (n Dadia) [16], 19 July 1997: net, 1fL (Ivanova 2000). – cave Kamila (n Dadia) [17], 24 July 1997: net, 1m (Ivanova 2000). – Provatonas river (n Provato) [18], 21 July 1997: net, 1fL, obs. nurs. colony of ca. 20 ind. (Ivanova 2000). – Halkidiki: Marathoussa [19], 1982, 1m (Volleth 1987). – Thessaloniki: Thessaloniki [20], 17 ind. (Hatopoulou-Georgudaki 1977). – Aegean Is.: Eubœa [= Évia] [21] (Lindermayer 1855, Kolenati 1859). – Sámos [22], individuals (Helversen 1998). – Skyros [= Skíros] [23], 2 ind. (Pohle 1953). – Crete: Ag. Pnevma [24], 2 ind. (from owl pellets) (Pieper 1977); – spring in valley n Samaria (n Omalos) [25], 16 June 1942: 1 ind. (Pohle 1953). – Skotino [= Skoteino] [26], 1 ind. (from owl pellets) (Pieper 1977). – Topolia [27], 2 ind. (from owl pellets) (Pieper 1977). – Ionian Is.: Korfu [= Kérkira], Ag. Mathaeos [= Agia Matheos] [28], 1 ind. (from owl pellets) (Niethammer 1962). – Peloponnese (no exact loc.), individuals (Helversen 1998).

DISTRIBUTIONAL STATUS (Fig. 9). Review of records from various regions of mainland Greece, Corfu, Crete and two Aegean islands suggests that the whole region is part of the range of this species. Helversen (in Mitchell-Jones et al. 1999) adds further records made, above all, in Epirus, Macedonia and Peloponnese. Thus the occurrence in Greece connects continuously with the documented range of the species in the neighbouring countries (see Mitchell-Jones et al. 1999, etc.). Comparing the number of localities in Greece with those in the neighbouring countries, the overall abundance could seem to be lower in Greece; the differences, however, are probably due to different intensity of investigations carried out in the different countries. Even in this region this species can be described as common, confined to both karstic or mountain areas and to cultivated landscape including human settlements. External and cranial dimensions of examined specimens of *E. serotinus* from Greece are shown in Tab. 3.

Eptesicus (bottae) anatolicus Felten, 1971

RECORDS: **Published data**: Aegean Is.: Rhodos [= Rodos], Charaki Bay, estuary of Makaris creek, 1 Sept. 1996: det. (Helversen 1998). – Rhodos [= Ródos], Gadouras creek, bridge n Agios Georgios Loryma, 7–10 Sept. 1996: 1 ind. (Helversen 1998). – Rhodos [= Rodos], Kiotari, sea shore, 3 Sept. 1996: det. (Helversen 1998). – Rhodos [= Ródos], Kolimbia, sea shore, 9 Sept. 1996: det. (Helversen 1998). – Rhodos [= Rodos], Lachania [= Lahaina], shore, 7 Sept. 1996: det. (Helversen 1998). – Rhodos [= Ródos], Lardos Bay (S Lindos), creek estuary, 4 Sept. 1996: net, 5fa (Helversen 1998). – Rhodos, resp. Rhodes [= Rodos], Sálakos, creek, 10 Sept. 1996: net, 1m (Helversen 1998, Volleth et al. 2001).

DISTRIBUTIONAL STATUS. This Asian species appears in the list of Greek fauna thanks to the records on Rhodes Island (Helversen 1998). Therefore, it has been considered a member of European bat fauna from a political point of view, while its characteristic Asian range is not questioned. In view of the known range in the western part of Asia Minor (Spitzenberger 1994), however, finding *E. (b.) anatolicus* on the adjacent Greek islands (Chios, Samos, Kos, Kastellorizo, Karpathos, etc.) cannot be ruled out (see Pieper 1966).

TAXONOMIC NOTE. The individuals found on Rhodes Island belong to the Asia Minor population, that is, to the form denoted as *E. bottae anatolicus* Felten, 1971 (terra typica: Alanya, SW Turkey) (Harrison 1975, Nader & Kock 1990, Koopman 1994, Mitchell-Jones et al. 1999). As concerns records of *E. b. anatolicus* on Rhodes Island, Helversen (1998) considers possible conspecificity

of the North African form denoted as *E. serotinus isabellinus* (Temminck, 1840) (t l environs of Tripoli, Libya) and the form *E. bottae*. This opinion, which is not new (see Hanák & Elgadi 1984 for a review), deserves attention and, beyond doubt, it is necessary to thoroughly revise the pertinence of merging the two forms into a single species (in which case the name *isabellinus* would have priority). At this point, however, further doubts can be casted, as the bat faunae of NW Africa and the Middle East share only few identical elements of the Mediterranean arboreal. According to our own observations, the parapatric occurrence of several forms has been found in several places in the Middle East, where two forms are included in a single species, *E. bottae* (Peters, 1869) *E. b. anatolicus* and *E. b. hingstoni* Thomas, 1919 (t l Baghdad, Iraq) in western Syria, or *E. b. anatolicus* and *E. b. taftanimontis* Rougin, 1987 (t l Mt. Taftan, Iran Baluchestan) in eastern Iran. The form *anatolicus* distinctly differs from the two remaining ones ecologically (being a species of the Mediterranean arboreal, while the remaining ones live exclusively in deserts), as well as metrically and in coloration (*anatolicus* being larger and darker). Considering the marked differences in many respects, *E. (b.) anatolicus* cannot be mistaken for the adjacent forms and, at the same time it is distributed close to the adjacent desert forms, it is justified to consider *E. anatolicus* to be an independent species which should be distinct from *E. bottae*. This problem will be discussed in details in a forthcoming contribution.

Hypsugo savii (Bonaparte, 1837)

Records. **Original data**. Arkadia: Elenhori [1] valley 3 km S, 28 August 2001, det. min. 3 ind. – Attiki: Piraeus, Athina, Likavitos hill [2], 9–11 Oct. 2000, det. several ind. – Fokida: Delfi [3], 22 Sept. 1988, det. 1 ind. – Halkidiki: Petralona [4] cave, 5–8 Oct. 2000, det. several ind. – Ilia: Arhea Olympia [5], ruins, 24 August 2001, obs. 1 ind. – Ioannina: Papigo [6] cave, 26 Sept. 1988, net. 1ms (NMP 48577 [S+B]). Papigo above creek, 25 Sept. 1988, net. 1ma (NMP 48571 [S+B]). – Kardhitsa: Antihiro [7], Tavropos river, 31 August 2001, det. min. 3 ind., net. 1ma (NMP 49029 [S+A]). – Kriti: Milos [8], 1 km E, 15 July 2000, net. 1fi (MHNG 1807.061 [S+A]). – Korinthia: Antikrion (n. Riza) [9], 19 August 1964, 1f (WIC 701). – Lakonia: Githio, rocky crevice 5 km NE [10], 1f (WIC 706). – Polidroso [11], mountain plateau 2 km S, 27 August 2001, det. min. 2 ind. – Messinia: Neo Proastio [12], cave, 12 Sept. 1996, net. 1ma (NMP 48730 [S+A]). – Trahila [13], cave, 13 Sept. 1996, net. 1ms, 1fa (NMP 48732 [S+A]). – Pieria: Agios Dionissios [14], 15 August 1930, 1 ind. (ZMMU 35110, leg. Grebenščikov), 15 August 1931, 1 ind. (ZIN 622). – Paralia Skotinas [15], beach, 19 Sept. 1988, net. 1ms (NMP 48565 [S+B]). – Serres: Agios Ioannis Prodromos [16], river n. monastery, 17 July 2000, net. 5m, 2f (coll. 1fi MHNG 1807.063 [S+A]). – Thessaloniki: Rendina [17], 5 km E, 25 July 2000, net. 1m. – Thesprotia: Asprokklissi [18], above pool, 1 July 1989, net. 2fa (NMP 48701, 48702 [S+B]). Trikala: Meteora [19], Agia Triada monastery, 3 Sept. 1988, det. 1 ind. – Vrotia: Arahova [20], Corycian cave, 31 July 2000, net. 5m (coll. 1ma MHNG 1807.062 [S+A]). Xanthi: Galani [21], cave, 23 June 1989, net. 1fG (NMP 48678 [S+B]). – Aegean Is.: Samothraki: Hora (= Samothraki) [22], 10–11 July 1994, det. 1 ind., – Thassos, Arhangelou monastery [23], spring 1 km W, 26 June 1989, net. 1fL (NMP 48696 [S]). – Thassos, Panagia [24], Dracotrypa cave, 24 June 1989, net. 1ms, 1ma (NMP 48689, 48690 [S+B]). – Thassos, Theologos [25], above creek, 25 June 1989, net. 3ma, 1fG (NMP 48691–48694 [S+B]). – Thira, Perissa [26], 11 Oct. 2000, det. 2 ind. – Crete: Agia Roumeli [27], a rocky cliff, 14 July 1995, det. 1 ind. – Amoudara [28], cave, 8 July 1995, det. 1 ind., rocky canyon, 7 July 1995, det. 1 ind. – Gerani [29], rocky canyon, 16 July 1995, det. 1 ind. – Koma lake [30], SW shore (n. Hania), 1 ind. (BMNH). – Xyloskalo n. Omalos [31], cave, 13 July 1995, det. 1 ind. – **Published data**. Achaia: Kastritsi, resp. Kastritis [32], 10 Oct. 1972, 1m, resp. 2m, 1f (Hanoulou-Georgudaki 1977, 1985). – Attiki-Piraeus: Dekelion [= Dekeleia] [33], 2m, 4f (as *Vespertugo maurus*) (Winge 1881). – Evros: Diavolorema river (n. Dadia) [34], 19 July 1997, 1mj, 2fj (Ivanova 2000). – cave Kamila (n. Dadia) [35], 24 July 1997, 6m, 1mj (Ivanova 2000). – Provatonas river (n. Provato) [36], 21 July 1997, 2mj, 4fj (Ivanova 2000). – Ioannina: Milia [= Milea] [37], N. P. Valia Calda, Zesto Rema, July 1985, obs. (Thanos 1987). Pieria: Monastery of St. Dionysios [= Agios Dionissios] [14], first half of May 1931, 8m, 3f, 1 ind. (coll. 3m, 1f) (Chaworth-Musters 1932). – Aegean Is.: Amorghos [= Amorgos] [38], August 1932, 1 ind. (Wettstein-Westersheim 1933). – Euboea [= Evia] [39] (Lindermayer 1855, Kolenati 1859). – Karpathos [40] (Pieper 1977), an individual (Helversen 1989). – Rhodos [= Rodos], Prof. Ilias [= Profitis Ilias] [41], 1983, 1m (Volleth 1987), Rhodos [= Rodos], an individual (Helversen 1989b). – Crete: Ano Viannos [= Ano Viannos] [42], 1 ind.

Tab. 3. External and cranial dimensions of examined specimens of genera *Vespertilio* Linnaeus, 1758, *Eptesicus* Rafinesque, 1820 and *Hypsugo* Kolenati, 1856 from Greece. For abbreviations see text.

No.	locality	sex	LC	LCd	LAt	LA	LTr	G	LCr	LCb	LaZ	LaI	LaN	AN	CC	M¹M³	CM³	LMd	ACo	CM₁
Vespertilio murinus																				
NMP 48557	Prionia	m	64	44	43 8	13 5	6 5	20 0	14 96	14 68	9 33	3 88	7 43	5 00	4 77	5 72	5 07	10 73	3 42	5 37
Eptesicus serotinus																				
NMP 48646	Maroma	m	71	49	50 8	19 0	10 5	20 5	20 68	19 83	13 47	4 37	9 47	6 77	6 68	8 32	7 77	14 92	5 25	8 52
NMP 48679	Galani	f	76	58	54 0	19 0	8 0	30 0	20 73	20 09	14 03	4 20	9 53	6 68	6 58	8 52	7 93	15 85	5 62	8 84
NMP 48680	Galani	f	73	59	51 6	19 5	9 0	25 0	21 17	20 12	13 88	4 03	9 43	6 33	6 50	8 64	7 98	15 51	5 88	8 93
NMP 48681	Galani	f	71	62	55 0	20 0	9 5	24 0	21 67	20 73	14 02	4 17	9 62	6 63	6 94	9 02	8 52	16 08	6 01	9 17
NMP 48682	Galani	f	76	64	54 7	20 0	11 0	32 0	21 72	20 84	14 85	4 43	9 93	7 00	7 17	9 17	8 00	16 35	6 41	8 98
NMP 48683	Galani	f	76	58	51 3	18 0	10 0	25 0	20 74	20 13	14 27	4 45	9 35	6 65	6 66	8 88	8 05	15 62	5 72	8 95
NMP 48684	Galani	f	75	58	56 8	20 0	10 0	32 0	21 36	20 77	14 48	4 26	9 73	6 93	7 10	8 77	8 08	15 93	5 98	8 97
NMP 48685	Galani	f	71	58	51 7	19 5	10 0	24 0	21 15	20 29	14 26	4 75	9 95	7 02	6 90	8 62	8 03	16 13	5 90	8 82
NMP 48686	Galani	f	76	62	55 4	19 5	11 0	24 0	20 97	20 27	14 32	4 42	9 55	6 77	6 76	8 82	8 02	15 87	5 80	8 95
NMP 48687	Galani	f	75	59	53 2	19 0	10 5	27 0	21 42	20 52	14 32	4 27	9 57	6 72	6 63	8 22	8 00	15 88	5 83	8 72
NMP 48723	Kombotades	f	75	55	55 0	18 4	6 1	22 7	21 29	20 33	14 72	4 55	9 55	7 08	6 83	8 65	8 19	15 92	5 96	8 75
Hypsugo savii																				
NMP 48565	P. Skotinas	m	49	39	31 2	12 0	6 5	8 0	12 93	12 70	8 32	3 18	6 56	4 55	4 11	5 47	4 32	9 11	2 57	4 65
NMP 48571	Pappigo	m	51	39	34 5	13 0	6 0	10 5	13 37	13 29	8 88	3 52	6 63	4 42	4 28	5 89	4 63	9 52	2 80	4 97
NMP 48577	Pappigo	m	49	40	34 0	14 0	6 5	9 0	13 74	13 32	8 72	3 65	6 74	4 58	4 25	5 72	4 71	9 52	2 73	4 98
NMP 48678	Galani	f	51	37	33 6	12 0	6 0	10 0	13 72	13 32	8 83	3 51	6 79	4 62	4 42	5 82	4 43	9 48	2 72	4 98
NMP 48689	Thassos Is.	m	48	36	32 2	13 0	6 0	7 5	13 22	12 83	8 88	3 51	6 98	4 45	4 41	5 83	4 26	9 32	2 93	4 71
NMP 48690	Thassos Is.	m	46	40	34 2	13 0	6 5	5 5	13 51	13 07	8 44	3 32	6 55	4 59	4 41	5 32	4 58	9 37	2 64	4 94
NMP 48691	Thassos Is.	m	49	37	34 5	14 0	6 5	7 0	13 63	13 17	8 81	3 60	6 79	4 50	4 13	5 80	4 62	9 49	2 71	5 07
NMP 48692	Thassos Is.	m	49	38	34 3	13 0	6 5	8 0	13 31	13 02	8 62	3 46	6 55	4 74	4 30	5 72	4 58	9 42	2 67	4 88
NMP 48693	Thássos Is.	m	48	37	31 8	12 5	6 0	6 5	13 46	12 96	8 36	3 33	6 57	4 56	4 25	5 56	4 53	9 42	2 93	4 80
NMP 48694	Thássos Is.	f	49	39	33 3	14 0	7 0	12 0	13 54	13 26	8 86	3 60	6 77	4 52	4 54	6 06	4 67	9 75	2 73	5 02
NMP 48696	Thassos Is.	f	53	43	35 1	14 5	6 5	7 5	13 72	13 29	9 54	3 63	7 02	4 79	4 43	6 22	4 68	9 78	2 92	5 02
NMP 48701	Asprokklissi	f	52	42	35 2	13 3	7 0	11 5	13 78	13 47	8 97	3 24	6 72	4 79	4 55	6 07	4 77	10 08	2 89	5 11
NMP 48702	Asprokklissi	f	54	42	34 7	13 5	6 0	12 0	14 07	13 73	9 15	3 78	7 13	4 77	4 54	6 13	4 92	9 97	2 90	5 26
NMP 48730	Neo Proastio	m	51	39	34 4	13 7	4 6	8 1	13 48	13 04	8 93	3 56	6 83	4 68	4 27	5 74	4 68	9 80	2 72	5 09
NMP 48731	Trahila	f	54	39	35 4	12 8	4 4	7 4	13 42	13 17	8 80	3 36	6 51	4 37	4 18	5 78	4 58	9 55	2 95	5 00
NMP 48732	Trahila	m	56	38	34 5	13 7	5 1	6 3	13 18	12 90	8 74	3 62	6 62	4 56	4 19	5 72	4 62	9 28	2 72	4 90
NMP 39029	Anthiro	m	53	42	34 6	13 9	5 2	7 0	13 87	13 26	8 83	3 60	6 75	4 64	4 44	5 70	4 53	9 58	2 80	4 82

(from owl pellets) (Pieper 1977). – Ádhianos [43], Atziganospelos cave, 10 Sept 1974: 1f (Iliopoulou-Georgudaki 1977, 1985). – Nerokouros cave [44], 1m, 2f (Iliopoulou-Georgudaki 1977). – Sarchos [= Sárhos] [45], 5 ind (from owl pellets) (Pieper 1977). – Zarós Eracleion [46], 5 May 1975: 1m (Iliopoulou-Georgudaki 1985).

DISTRIBUTIONAL STATUS (Fig. 14). According to the distribution and fairly large number of records from both mainland and insular Greece, the range of *H. savii* can be described as covering the whole territory of Greece. Moreover, it is a relatively common species inhabiting various habitat types from lowlands up to mountain localities (Olympus Mts., 1100 m a. s. l., Parnonas Mts., 1100 m a. s. l., Pindus Mts., 1200 and 1300 m a. s. l.). The species has been most frequently captured in karstic areas, rocky habitats, stream canyons, and near human settlements. A similar situation has been found in adjacent countries, above all, the thoroughly investigated Bulgaria (own data) or Rep. of Macedonia (Kryštufek et al. 1992, 1998, Stojanovski 1994), but no records are still available from Turkish Thrace. External and cranial dimensions of examined specimens of *H. savii* from Greece are shown in Tab. 3.

Pipistrellus pipistrellus (Schreber, 1774) s. l.

RECENT: **Original data**: Ethnikí Odós: Kombotades [1], above the Sperchas river, 9 Sept. 1996: net, 2ma, 5f (NMP 48716, 48722 [S+A]). – Grevená: Dímitra [2], a river, 3 km E, 1 Sept. 2001: net, 1ma, 1f (NMP 49040, 49041 [S+A]). – Halkidhikí: Agios Prodromos [3], 1 km W, 13 Sept. 1988: net, 1fa (NMP 48555 [S+B]). – Ormilia [4], creek, 14 Sept. 1988: net, 1f (NMP 48556 [S+B]). – Ioannina: Aidonohóri (2 km S of Melissopetra) [5], Aoos river, 28 Sept. 1988: net, 2ma (NMP 48588 [S+B], 48589 [S]). – Ioánnina, Limni Pamvotis lake, Pantelemon I. [6], 22 April 1996: net, several individuals. – Kleidoniá [7], Voidomátis river, 27 Sept. 1988: net, 2f (NMP 48586, 48587 [S+B]). – Lakonía: Spárti [8], above the Evrotas river, 16 Sept. 1996: net, 1ma (NMP 48738 [S+B]). – Preveza: Agios Dionýsios (n. Litóhoro, Olympos Mts.) [9], 15 August 1931: 1 ind. (ZIN 664). – Parália Skotínas [10], plane-tree line, 22 July 1992: det. nun, 1 ind. of *P. pipistrellus* s. l. (leg. J. Gaisler). – Preveza: Mesopotamo [11], water canal, 2 July 1989: net, 1m, 1f (NMP 48707, 48708 [S+B]). – Trikala: Meteora [12], Agia Triada monastery, 24 Sept. 1988: net, 1ma (NMP 48570 [S+B]). – Xanthi: Xanthi, road 8 km NW [13], 17 June 1989: net, 1ma (NMP 48628 [S+B]). – Aegean Is.: Andros [14], 1 ind. BMNH (leg. Mattaz). – Samothráki, Thermá [15], 13 July 1994: det. 1 ind. – Skíathos [16], Kapriso, 18 Oct. 1973: 1f (SMF 45212). – Thassos, Panagia [17], 17 July 1994: det. 1 ind. – Thassos, town of Thassos [18], ancient Agora, 27 June 1989: net, 1ma (NMP 48700 [S+B]). – Crete: Agia Roúmeli [19], in a village, 14 July 1995: det. ca. 20 ind. *P. cf. pipistrellus* s. l. – Psiloi [20], village, 19 July 1995: det. 1 ind. *P. pipistrellus* s. l. – **Published data**: Arkadía: Kantáma, resp. Coryiaena [21], 6 July 1967: 2f, 1j, resp. 12f (Iliopoulou-Georgudaki 1977, 1985). – Kynouria, resp. Kynourias [22], Néa Hora, cave Agia Eleoussa, resp. Agios Elienas, 15 August 1972: 1m (Iliopoulou-Georgudaki 1977, 1985). – Attiki-Prefás: Athens [= Athina] [23], 1 ind. (Miller 1912), bei Athen [= Athina], April 1901: 1m, 1f (Wettstein 1941). – Dekelion [= Dekéleia] [24], 11m, 54f (Wagner 1881). – Kephissia [= Kifissiá] [25], 1m, 3f (Miller 1912). – Iatoi n. Athens [= Athína] [26], 11 ind. (3f) (Miller 1912). – Drama: Skalotí [27], 1985: 1m (Volleth 1987). – Etolía-Akarnanía: Akarnania (no exact loc.), 1894: 1fa (Bolkay 1926). – Evinohori, resp. Evinochori (n. Messolongi) [28], 12 May 1972: 3f, resp. 1f (Iliopoulou-Georgudaki 1977, 1985). – Xeromeron [= Xiromeno] [29], 12 Sept. 1974: 2f (Iliopoulou-Georgudaki 1985). – Évros: Alexandroupoli [30] (Kanneli & Hatzisarantou 1963). – Dadia Forest Reserve [31] (Adamakopoulos et al. 1995). – Diavolorema river (n. Dadia) [32], 22 July 1997: net, 1m (Ivanova 2000). – cave Kamilia (n. Dadia) [33], 24 July 1997: net, 1m (Ivanova 2000). – Provatónas river (n. Provato) [34], 21 July 1997: net, 1m (Ivanova 2000). – Ftiotída: Agios Georgios [35], 1983: 1m (Volleth 1987). – Ioannina: Mília [= Mília] [36], N. P. Valia-Calda, Zesto Rema, July 1985: obs. (Tsunis 1987). – Kardítsa: Moschato [= Moshato] [37], 15 April 1972: 2f (Iliopoulou-Georgudaki 1985). – Lakonía: Gytheion [= Githio] [38], 17 June 1898: 1fa (Bolkay 1926). – Pieria, Monastery of St. Dionysiós [= Agios Dionissios] [9], March–May 1931: obs. in Monastery building, coll. 3m, 1f (Chaworth-Musters 1932). – Aegean Is.: Chios [= Hios], Chios (Stadt) [39], 13 May 1972: 1m (Kock 1974a). – Euboea [= Évia] [40] (Lindermayer 1855, Kolenati 1859). – Ikaria [41] (Kanneli & Hatzisarantou 1963). – Karpathos [42] (Kanneli & Hatzisarantou 1963). – Kimolos [43] (Kanneli & Hatzisarantou 1963). – Kithnos [44] (Kanneli & Hatzisarantou 1963). – Kos, cave Pylon, resp. Pylion [= Pili] [45], 4 May 1967: 22f, resp. 9f (Iliopoulou-Georgudaki 1977, 1985). – Rhodes [= Rodos], Rhodes-town [46] (Festa 1914); – Samos, Pyrgos [= Pírgos] [47], old church, 22 May 1963: 1m (Laar & Daan 1964). – Samothráki [15] (Kanneli & Hatzisarantou 1963). – Sífnos [48] (Kanneli & Hatzisarantou 1963). – Crete: Kissamo Kastelo

[= **Kissámou Kastéli**] **[49]**, Korfalona, 20 April 1958: 1m (Kahmann 1959). – Morea [= **Peloponissos**] (Keyserling & Blasius 1839). – Griechenland (no exact loc.) (Blasius 1857, Kolenati 1856).

Pipistrellus pipistrellus (Schreber, 1774) s. str.

Records. **Original data**: Attiki - Piraeus: Athina, Lakavitos hill [1], 10 Oct. 2000: det. 1 ind. – Florina: Pili [2], 3 km E, 13 July 2000: net 2ma, 2fa (coll. 1m*, 1fL*, MHNG 1807.051, 1807.052 [S+A]). – Grevena: Dimitra [3], a river 3 km E, 1 Sept. 2001: det. min. 2 ind. – Halkidiki: Petrálona [4], cave, 5–8 Oct. 2000: det. several ind. – Ioánnina: Ioannina, Limni Pamvotis lake [5], NW bank, 13 Oct. 2000: det. ca. 5 ind. – Serres: Agios Ioannis Prodromos [6], river n. monastery, 17 July 2000: net 1ms* (MHNG 1807.053 [S+A]). – **Published data**: Attiki - Piraeus: Athens [= Athina] [1], 1992–1995, the calls detected on 23 sites throughout whole metropolitan area of Athens (Legakis et al. 2000).

Distributional status (Fig. 15). The traditional *Pipistrellus pipistrellus* species complex includes one of the most frequently bat forms found in Greece; its occurrence has been documented by numerous records throughout the mainland, including Peloponnese, as well as on Crete and a number of Aegean islands. Since the morphological revision of museum material has not been feasible, it is necessary to re-describe the true distribution of the two newly established sibling species on the basis of new data (see Taxonomic note below). Our observations show that Greece is inhabited by both sibling species, viz., *P. pipistrellus* s. str. and *P. pygmaeus/mediterraneus*. We have confirmed the occurrence of *P. pipistrellus* s. str., on the basis of genetical comparisons (cytochrome b sequences – indicated with asterisk [*] in the above list of records) or analyses of echolocation signals in four localities in northern Greece. Also, Legakis et al. (2000) report having recorded the 45 kHz phonic type (= *P. pipistrellus* s. str.) in the city of Athens, where we also detected calls of this species. The problem of the specific attribution of populations of the *P. pipistrellus* complex in southern Greece (Peloponnese, Crete) and on the Aegean Islands remains open for discussion. Experience obtained by using an ultrasound detector on Cyprus, suggest that it is inhabited by both phonic types (J. Gaisler, pers. comm.). A single sequence analysed from Cyprus confirms the presence of *P. pygmaeus/mediterraneus* there (Ruedi, unpubl. data). The same situation could be found in southern Greece including Crete. Records from that island could pertain to both newly defined species. External and cranial dimensions of examined specimens of *P. pipistrellus* s. l. from Greece are shown in Tab. 4.

Taxonomic note. In the past decade, studies of echolocation signals and genetical analyses have resulted in discovery, in western Europe, of two cryptic bat species previously known as *P. pipistrellus* (Jones & Parijs 1993, Barratt et al. 1997), viz., *P. pipistrellus* s. str. (Schreber, 1774) (terra typica: France) and *P. pygmaeus* (Leach, 1825) (t. t.: Dartmoor, Devonshire, U. K.) (Jones & Barratt 1999). The definitive name of the latter species is not yet firmly established as some authorities apply *P. mediterraneus* Cabrera, 1904 (t. t.: Valencia, Spain) (Helversen et al. 2000, Van Cakenberghe 2001) instead, for a review see Horáček et al. (2000).

The two newly defined species can be readily separated by the terminal frequencies of their echolocation calls: around 45 kHz in *P. pipistrellus* s. str., and around 55 kHz in *P. pygmaeus/mediterraneus* (Jones & Parijs 1993) and also by their DNA sequences (Barratt et al. 1997). Their morphological differentation, even after extensive analyses (Barlow & Jones 1999, Häussler et al. 2000), have not yet been established on more numerous material that would come from a wider geographic range (the latter being still not precised for the two forms), especially for populations living in SE Europe including Greece. For this reason, the material collected by us has not been revised morphologically, and our earlier records are given here under the collective name *P. pipistrellus* s. l. (see above and Tab. 4). Statements of the presence of cryptic species are thus based exclusively either on specimens that were studied genetically or those for which the field records of echolocation calls are available.

Pipistrellus pygmaeus (Leach, 1825) seu *P. mediterraneus* Cabrera, 1904

RECORDS **Original data** Arkadia Spatharis [1], creek 4 km S, 24 August 2001 det mm 5 ind – Grevena Dimitra [2], a river 3 km E, 1 Sept 2001 det mm 3 ind – Ilia Nea Ilis, Pinios river 2 km N [3], 4 August 2001 net 1fa* (MHNG 1807 058 [S+A]), – Simopoulo [4], river 2 km W 23 August 2001 net 1ma (NMP 49008 [S+A]) – Kardhitsa Anthiro [5], Tavropos river, 31 August 2001 det mm 5 ind., net 1ma (NMP 49009 [S+A]) – Kastoria Kria Nera [6], river, 4 Sept 2001 det mm 3 ind – Messinia Artiki [7] river 1 km N, 25 August 2001 det mm 5 ind., net 1ms (NMP 49021 [S+A]), – Tzánes [8], river 2 km NW, 26 August 2001 det mm 5 ind – Thesprotia Paralia Drepano [9], 6 Sept 2001 det mm 2 ind – Thessaloniki Rendina [10], 1 km E, 28 July 2000 net 2ma* (MHNG 1807 059, 1807 060 [S+A]) – Vrotia Arahova [11] Corycian cave, 31 July 2000 net 5m, 1f (coll 3ma*, MHNG 1807 055–057 [S+A]) – Aegeanis Lesvos Agios Isidoros [12], cave, 12 Sept 2000 net 1m, 1f (coll 1ma*, MHNG 1807 096 [S+A]), – Lesvos, Mithon [13] dirt track, 16 Sept 2000 net 1m, 2f, Lesvos, Skoutaros [14], river 4 km S, 15 Sept 2000 net 5m, 4f, Ikaria Afandou [15], fields n the village, 11 Sept 2001 det mm 20 ind (leg J Gaisler)

DISTRIBUTIONAL STATUS (Fig 15) The presence of this species has been demonstrated by genital analyses (cytochrome b) of material from four localities that embrace the whole of mainland Greece (Peloponnese, Sterea Ellada, Macedonia) These records (specimens) are indicated by asterisk (*) in the above list With aid of ultrasonic bat detectors (mostly heterodyne, of course) the species was recorded in another 11 localities, above all, in the south of Greece It can be inferred from the hitherto known distribution of this species in other parts of southern Europe (Barratt et al 1997, Russo & Jones 2000, Horaček et al 2000) that this pygmy pipistrelle occurs throughout mainland Greece and its offshore islands In localities from southern Greece checked by us, the species has been recorded (and sometimes even netted) syntopically with one of other *Pipistrellus* species at least three times with *P. kuhlii*, once with *P. pipistrellus* s. str. (Dimitra, Thessaly)

Pipistrellus nathusii (Keyserling et Blasius, 1839)

RECORDS **Original data** Pieria Paralia Skotinas [1], beach, 19 Sept 1988 net 1ms, 1fs (NMP 48563, 48564 [S+B]) Thessaloniki Thessaloniki [2] university campus, 11 Sept 1988 net 1m (NMP 48565 [S+B]) – Xanthi Xanthi, road 8 km NW [3], 17 June 1989 net 1fG (NMP 48629 [S+B]) – Aegeanis Lesvos, Skoutaros [4], river 4 km S, 15 Sept 2000 net 1f – **Published data** Drama Paranesti [= Paranesti] [5], creek 15 km N 20 Oct 1988 net 1m (Helversen & Weid 1990), – Dipotama [6], creek, 21 Oct 1988 net 2m, 2f (Helversen & Weid 1990) – Etolia Akarnania Mesolongi, resp Mesolongion [= Messolongi] [7] 3 April 1962 1f (Pieper 1978, Helversen & Weid 1990) – Evros Dadia Forest Reserve [8] (Adamakopoulos et al 1995), – Diavolorema river (10 km W Dadia) [9], 19 July 1997 net 1m (Ivanova 2001) – Florina Bigla [= Vigla] Mt [10], n Alona, Vermo Mts 16 August 1982 net 1m, 10 August 1987 net 4m, 12 July 1988 net 2m, 29 July 1988 net 1m (Helversen & Weid 1990) – Psarades [11], Prespa-See [= Mikri Prespa lake], 18 August 1987 net 1m, 3 and 14 August 1988 net 9m (Helversen & Weid 1990) – Halkidiki Marathousa [12], creek, 31 July 1982 net 1m, 3 August 1982 net 2m, 4 August 1982 net 2m 20 June 1984 net 1m (Helversen & Weid 1990, cf Volleth 1987) – Ilia Varda [13], wood, 22 April 1984 net 1m, 3 April 1986 3f (Helversen & Weid 1990) – Imathia delta of Aliakmon [= Aliakmonas] river [14] house, 10 April 1984 1f (Helversen & Weid 1990) – Kardhitsa Palamas [15], 7 April 1972 4m, 3f (Hopoulou-Georgudaki 1977, 1985) – Kastoria Nestorion [= Nestorio] [16] Aliakmonas river, 21 August 1987 net 1m (Helversen & Weid 1990), – Pevkos [= Pefkos] [17], Aliakmon [= Aliakmonas] river, 20 August 1982 net 1m (Helversen & Weid 1990) – Kavala Chrysoupolis [= Hrissoupoli] [18], E of, delta of Nestos river, 28 June 1982 1m (Helversen & Weid 1990), – Kavalla [= Kavala] [19], 8 April 1963 1fad (24 May 1961 ringed in Voronež reserve Russia, 1600 km flight-distance) (Strelkov 1969) – Serres Megalohori, resp Megalochori [20], 12 April 1974 3m, 4f (Hopoulou-Georgudaki 1977, 1985) – Thessaloniki delta of Axios river [21], house 12 Oct 1988 3m, 5f (Helversen & Weid 1990), – delta of Loudias river [22], house, 3 April 1983 net 1m 7 April 1984 net 1m (Helversen & Weid 1990), church, crevice, 3 April 1983 net 1f, 19 April 1983 1m, 7f 7 April 1984 net 1m, 4f (Helversen & Weid 1990). Nimfopetra [23], 5 May 1977 mm 2 ind (from owl pellet) (Pieper 1978) Rendina [24], plane-tree wood, August Oct 1983 and 1988 obs (Helversen & Weid 1990) Stavros [25], bunker, 14 August 1979 net 1m, 28 Dec 1984 hib 8 ind (m+f) (Helversen & Weid 1990) Griechenland (no exact loc.) (Kolenati 1856, 1859)

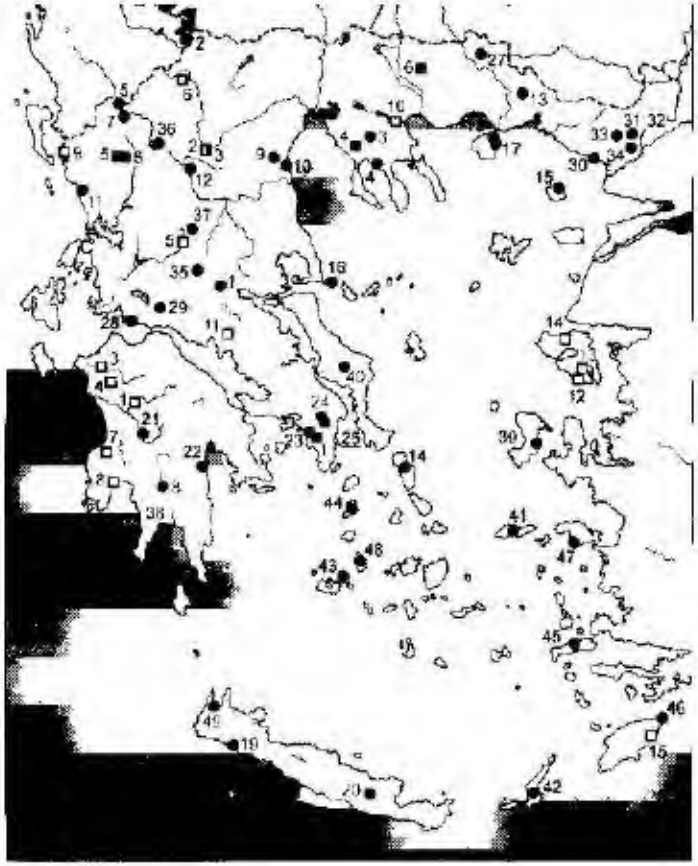

Fig. 15. Records of *Pipistrellus pipistrellus* superspecies. *P. pipistrellus* s. l. (closed circles), *P. pipistrellus* (Schreber, 1774) s. str. (closed squares), *P. pygmaeus* (Leach, 1825) seu *P. mediterraneus* Cabrera, 1904 (open squares)

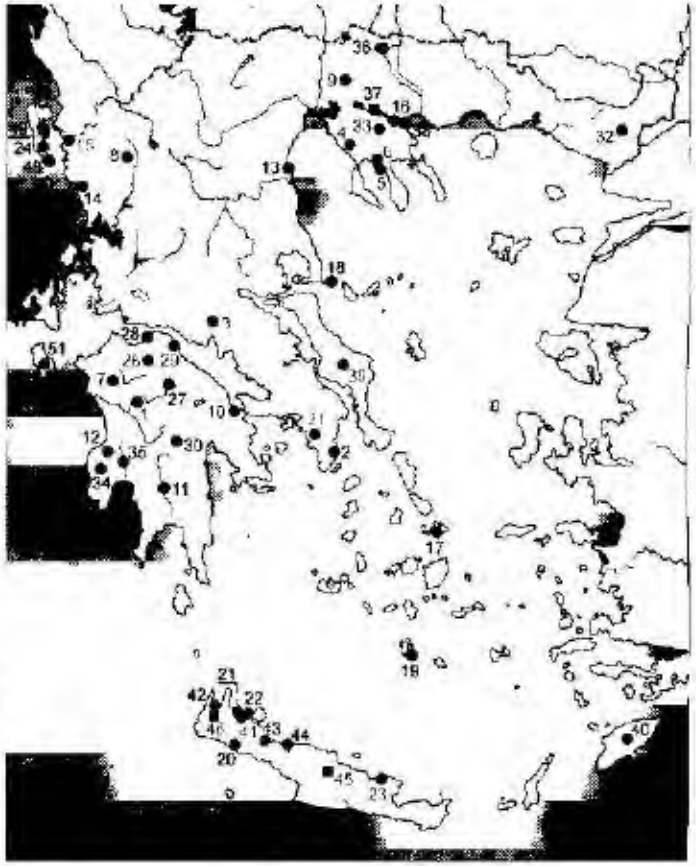

Fig. 16. Records of *Pipistrellus kuhlii* (Kuhl, 1817) in Greece, for symbol explanations see Fig. 2

Tab. 4. External and cranial dimensions of examined specimens of genus *Pipistrellus* Kaup, 1829 from Greece. For abbreviations see text.

No.	locality	sex	LC	LCd	LAt	LA	LTr	G	LCr	LCb	LaZ	Lal	LaN	AN	CC	M¹M³	CM³	LMd	ACo	CM₃
Pipistrellus pipistrellus s. l.																				
NMP 48553	Ag. Pródromos	f	43	34	30.1	10.5	4.7	4.0	11.68	11.21	7.37	3.52	6.17	4.17	3.21	4.57	3.98	8.02	2.00	4.24
NMP 48556	Ormília	f	43	34	30.3	11.0	6.0	4.5	11.73	11.08	7.35	3.32	6.17	4.20	3.67	4.92	4.17	8.18	2.18	4.44
NMP 48570	Meteóra	m	45	34	30.2	10.0	6.0	5.0	11.60	11.06	7.11	3.12	6.02	4.28	3.40	4.57	4.13	8.00	2.23	4.33
NMP 48586	Kleidoniá	f	44	35	29.3	10.5	6.5	7.0	11.33	10.84	7.32	3.53	6.18	4.21	3.62	4.93	3.95	7.90	2.17	4.15
NMP 48587	Kleidoniá	f	40	36	31.4	10.0	5.5	5.5	12.04	11.46	–	3.19	6.21	4.25	3.52	4.79	4.12	8.37	2.32	4.40
NMP 48588	Asdonohóri	m	44	32	29.7	9.5	5.5	5.0	11.53	10.05	7.21	3.22	6.14	4.30	3.42	4.48	4.04	7.86	2.28	4.20
NMP 48589	Asdonóhori	m	43	35	30.0	11.0	5.5	5.5	11.71	11.10	–	3.27	5.98	4.24	3.28	4.68	4.02	7.91	2.18	4.32
NMP 48628	Xánthi	m	41	33	29.5	10.0	5.5	5.0	11.07	–	7.11	2.85	5.73	3.96	3.29	4.53	3.85	7.83	2.17	4.16
NMP 48700	Thássos Is.	m	44	36	30.6	11.0	6.0	4.5	11.93	11.49	7.42	3.07	6.08	4.21	3.42	4.78	4.27	8.29	2.31	4.43
NMP 48707	Mesopótamo	f	42	33	29.0	10.0	6.0	6.0	11.08	10.62	7.06	3.14	5.95	4.25	3.44	4.45	3.82	7.72	2.16	4.08
NMP 48708	Mesopótamo	m	41	–	29.1	10.0	5.5	4.5	11.65	11.10	7.35	3.34	6.18	4.20	3.48	4.71	4.10	7.91	2.23	4.28
NMP 48716	Kombotádes	f	47	36	31.2	9.8	3.7	5.6	11.72	11.17	7.40	3.13	6.13	4.29	3.54	4.76	4.08	8.10	2.26	4.36
NMP 48717	Kombotádes	m	43	31	29.8	9.7	4.2	3.6	11.50	11.07	7.58	3.37	6.39	4.41	3.38	4.83	3.95	7.97	2.33	4.12
NMP 48718	Kombotádes	f	41	32	30.4	9.8	3.9	5.1	11.47	11.07	7.37	3.22	5.97	4.32	3.42	4.73	4.08	8.01	2.37	4.39
NMP 48719	Kombotádes	f	44	34	29.4	10.5	3.6	3.9	11.38	10.88	7.47	3.23	6.08	4.42	3.52	4.95	3.88	7.73	2.17	3.98
NMP 48720	Kombotádes	f	42	35	31.0	9.8	4.2	5.5	11.69	11.25	7.33	3.18	6.22	4.42	3.72	4.82	4.00	7.95	2.31	4.33
NMP 48721	Kombotádes	m	46	33	29.4	8.2	3.2	3.8	11.53	10.97	7.46	3.24	6.32	4.33	3.42	4.85	3.92	7.77	2.30	4.10
NMP 48722	Kombotádes	f	42	33	30.4	9.9	3.4	4.4	11.61	11.05	–	3.22	5.93	4.27	3.44	4.65	3.97	8.00	2.25	4.17
NMP 48738	Spárti	m	46	37	29.9	10.5	5.7	3.7	11.53	11.17	7.34	3.00	6.06	4.14	3.36	4.78	4.05	8.02	2.33	4.26
NMP 49040	Dímitra	m	47	33	30.6	11.1	5.3	3.9	11.67	11.22	7.42	3.26	6.23	4.45	3.58	4.82	4.18	8.13	2.22	4.44
NMP 49041	Dímitra	f	49	35	30.4	12.7	5.2	5.6	11.66	11.31	7.61	3.24	6.27	4.32	3.48	4.71	4.00	8.28	2.29	4.17
Pipistrellus pygmaeus / mediterraneus																				
NMP 49016	Simopoulo	m	42	34	28.9	9.8	4.7	3.9	11.32	10.78	7.18	3.13	5.92	4.14	3.28	4.68	4.02	7.84	2.12	4.18
NMP 49021	Artíki	m	44	34	30.6	10.4	4.9	3.4	11.35	10.93	7.35	3.17	6.08	4.20	3.38	4.62	3.97	7.92	2.25	4.18
NMP 49030	Anthiro	m	41	33	28.6	11.0	4.8	3.7	11.32	10.90	7.24	3.17	6.10	4.13	3.32	4.62	3.98	7.87	2.28	4.08
Pipistrellus nathusii																				
NMP 48551	Thessaloníki	m	50	35	33.7	12.0	5.5	6.5	13.31	12.78	8.05	3.64	6.93	4.43	4.00	5.27	4.62	9.10	2.34	4.84
NMP 48563	P. Skotínas	m	49	34	33.3	12.0	6.0	7.0	13.18	12.63	8.36	3.67	7.00	4.58	4.00	5.23	4.37	9.16	2.37	4.77
NMP 48564	P. Skotínas	f	49	36	33.3	12.0	7.0	7.5	12.97	12.44	8.02	3.62	7.10	4.30	3.96	5.18	4.33	9.18	2.27	4.62
NMP 48629	Xanthi	f	47	36	33.0	10.5	6.5	7.5	12.36	11.96	7.75	3.21	6.22	4.37	3.65	4.95	4.32	8.50	2.48	4.65

Tab. 4 continuation

No	locality	sex	LC	LCd	LAt	LA	LTr	G	LCr	LCb	LaZ	LaI	LaN	AN	CC	M'M'	CM'	LMd	ACo	CM,
Pipistrellus kuhli																				
No	locality	sex	LC	LCd	LAt	LA	LTr	G	LCr	LCb	LaZ	LaI	LaN	AN	CC	M'M'	CM	LMd	ACo	CM,
NMP 48554	Ormília	m	45	38	32.5	11.0	6 0	4 8	13.18	12 68	8 34	3 02	6 62	4 62	4 03	5 17	4 93	9.69	2.98	5.32
NMP 48555	Ormília	m	53	42	33.5	12.5	7 5	7 5	13 38	13 14	8.92	3 28	6 75	4 88	4 29	5 55	5 07	9 75	3.21	5.37
NMP 48561	P Skotinas	f	50	39	34.1	12.5	6 0	7 0	13.08	12 83	8 80	3 22	6 74	5 07	4 30	5 57	4 95	9.70	2.98	5.31
NMP 48562	P Skotinas	m	45	38	33 1	12 5	6 0	5 5	13 07	12 56	8 73	3 39	6 80	5.04	4.27	5 45	4 93	9,59	2 93	5 38
NMP 48703	Asprokklíssi	f	51	42	34 3	12 0	7 0	8 3	13 05	12.63	8 62	3 33	6 73	4 94	4 25	5 58	4.96	9 50	3 00	5 33
NMP 48704	Asprokklíssi	m	47	40	34.0	12 6	8 0	7 5	13.19	12 60	8 64	3 27	6 77	4 76	4 37	5 58	4.92	9,52	2 98	5.33
NMP 48705	Mesopótamo	f	49	44	35 0	12.5	7 5	7 5	12.92	12 60	8 54	3 15	6 40	4 88	4 23	5 43	4.94	9.54	2 98	5.26
NMP 48706	Mesopótamo	f	49	41	33.5	13 0	6 5	8 0	13 07	12 78	8 52	3.30	6 56	4.78	4 25	5 75	5 06	9 48	2 94	5.40
NMP 48733	Spárti	f	48	37	34 4	13 9	6 4	5 2	13 52	13 02	8 53	3.18	6.65	4 73	4 12	5 72	5 18	1–	3 28	5,49
NMP 48734	Spárti	f	47	38	34 9	13 4	6.7	5.0	13 07	12 68	8.52	3 18	6.58	4.72	4 17	5 74	5 03	9 82	3.07	5.32
NMP 48735	Spárti	m	51	38	33 3	12 8	6 4	4 9	13.03	12.72	8 38	3 23	6.43	4 67	4 29	5 60	4 96	9,53	3 32	5 35
NMP 48736	Spárti	f	50	38	33 9	12 6	6 0	4 5	13.18	12.70	8 59	3.18	6.45	4 69	4 23	5 63	5.02	9.64	3 10	5 42
NMP 48737	Spárti	f	48	39	35 5	13 5	6 3	5 3	13 28	12 91	8 66	3.32	6.72	4 83	4 35	5 70	5.08	9 74	3 12	5.33
NMP 49013	Simopoulo	f	50	40	33.9	14.1	5 5	6 2	13.37	13 08	8 82	3 57	6.88	5 02	4 28	5 50	5 08	9 76	3 20	5 32
NMP 49014	Simopoulo	f	49	42	33 8	13.1	5 3	6 5	13 43	12 86	8 74	3 20	6 57	4 87	4 47	5 68	5 14	9 88	3 13	5 37
NMP 49015	Simopoulo	f	48	39	33 1	13 8	5 2	6.2	13 28	12 95	8.59	3.35	6.66	4 89	4 22	5 72	5 11	9,53	3 07	5 38
NMP 49022	Artíki	f	50	38	34 2	13 7	5 4	5.9	13 47	12 92	8 67	3 42	6.87	4.88	4 05	5 55	5 07	9 64	3 18	5.42
SMF 26791	Tegéa	m	–	–	32 2	–	–	–	13 37	12 70		2 98	6.37	4.68	4 18	5 53	4 92	9 38	2 77	5 37
SMF 26792	Tegéa	f	–	–	35 0	–	–	–	–	12 60		3 38	6 51	–	4 13	5 48	4 87	9 60	2 93	5 50
SMF 26793	Tegéa	m	–	–	33 8	–	–	–	12 97	12.56		3 15	6 48	4 65	4 12	5 63	4 92	9.47	2 97	5 38
SMF 26795	Tegéa	f	–	–	34.5	–	–	–	13 17	12 83		3 18	6 28	4 72	4 32	5 72	4 82	9,62	3,12	5 48
SMF 28220	Koumas, CR	f	–	–	32.8	–	–	–	13 05	12 40		3 17	6 65	4 60	4 23	5 42	4 90	9 37	2 85	5 33
SMF 45213	Skíathos Is	f	–	–	33 5	–	–	–	13 48	13 38	8 93	3 32	6 52	4 78	4 28	5 67	5 12	10.07	3 17	5 48
SMF 45214	Skíathos Is	f	–	–	–	–	–	–	12 87	12 78	8 32	3 17	6 57	4 70	4 28	5 42	4 85	9 47	2 86	5 28
SMF 45215	Skíathos Is	f	–	–	34 1	–	–	–	13 37	12 87	8 58	3 09	6 39	4 77	4 33	5.65	4.93	9 62	3 10	5.38
SMF 45216	Skíathos Is	m	–	–	32 8	–	–	–	13 08	12 65	8 47	3 28	6 95	4 90	4 07	5,42	4 90	9 67	2 98	5 35
SMF 45217	Skíathos Is	f	–	–	–	–	–	–	13 38	12 83	8 45	3.12	6 48	4 57	4 27	5 52	4.95	9 65	3 02	5 42
SMF 45218	Skíathos Is	f	–	–	–	–	–	–	13 48	13 21	8 95	3.30	6.70	4.78	4 28	5.65	4 90	9 88	3 03	5.30
SMF 45219	Skíathos Is	f	–	–	–	–	–	–	13 02	12 73	8 55	3 29	6 68	4 65	4 25	5 62	4 90	9 55	3 02	5 28

DISTRIBUTIONAL STATUS (Fig 17) Although Greece is beyond doubt one of the southern marginal regions of the range of *P nathusii*, the centre of whose range lies in more northern regions of central and eastern Europe, there are numerous reliable records from that country Most of them come from the northern parts of Greece (Macedonia, Thrace) but there are also records of individuals in areas lying more to the south, such as Thessaly, Sterea Ellada and/or Peloponnese One record comes from an offshore island close to Asia Minor Most of these data pertain to individual males, females, or groups of individuals netted from April to early May and in August, September to October, data from June and July are less frequent, wintering has been evidenced in one case (14 Dec 1984) It can thus be concluded that the occurrence of *P nathusii* in Greece is primarily a seasonal phenomenon, involving individuals on migration from the more northerly parts of its range Such migration patterns has been evidenced by the finding a ringed individual (migrating from Voronež, Russia, to Kavala, E Macedonia – Strelkov 1969) Some of the records made in early summer, e g , 17 June (a pregnant female !), 19 June (2 males), 12 July (one and two males), 19 July (a male), 29 July (one and two males) in the north of Greece suggest the presence of a possible permanent population in wooded areas, no records of nursery colonies are available yet If this possibility is confirmed, it will be necessary to consider a shift of the southern limit of the permanent range of this species down to northern Greece (cf Strelkov 1997a, b). Such considerations are also supported by the recent discoveries of summer colonies in the southern part of central Europe (Martinoli et al 2000, Jahelkova et al 2000) External and cranial dimensions of examined specimens of *P nathusii* from Greece are shown in Tab 4

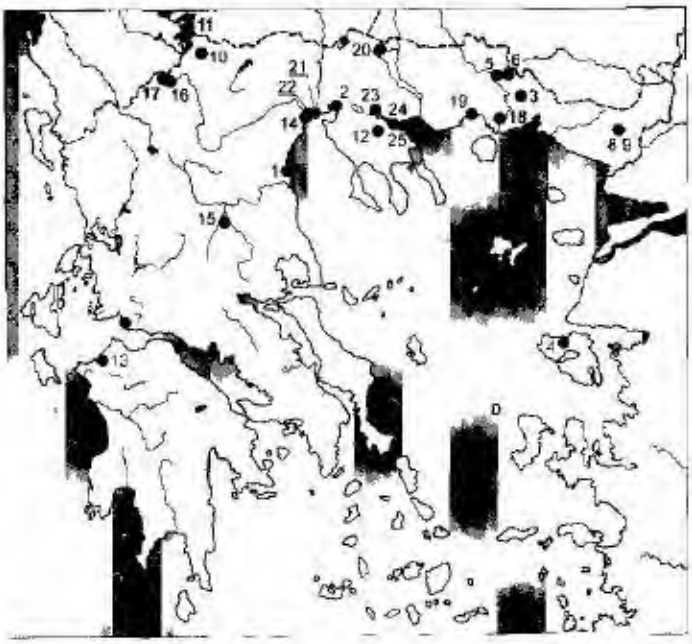

Fig 17 Records of *Pipistrellus nathusii* (Keyserling et Blasius, 1839) in Greece, for symbol explanations see Fig

Pipistrellus kuhlii (Kuhl, 1817)

Records. **Original data** Arkadia Spathari [1] creek 4 km S, 24 August 2001 det mm 2 md – Attiki Piraeus Avlaki, n Daskalio [2], 1–4 Oct 2000 det ca 10 md – Fokida Amfissa [3], 21 Sept 1958 1m (MHNG 949 055 [A]) – Halkidiki Eleohoria [4], village, 28 Sept 1988 det ca 20 md, – Metamorfossi [5], river 5 km W, 26 Sept 1988 net 4m, 2f, – Ormilia [6], creek, 14 Sept 1988 net 1ma, 1ms (NMP 48544, 48555 [S+B]) Ilia Simopoulo [7], river 2 km W, 23 August 2001 net 5 md (coll 3fa, NMP 49013 49015 [S+A]) – Ioannina Ioannina, Limni Pamvotis lake, Pantelemon I [8], 22 April 1996 net several md – Kyklis Milos [9], 1 km E, 15 July 2000 net 1ms (MHNG 1807 054 [S+A]) – Korinthia Arhea Korinthos, Akrokorinthos [10], castle ruins, 30 August 2001 obs 1 md – Lakonia Sparti [11], above the Evrotas river, 16 Sept 1996 net 1ma, 4fs (NMP 48733 48737 [S+A]) – Messinia Artiki [12], river 1 km N, 25 August 2001 det min 2 md, net 1fs (NMP 49022 [S+A]) – Pieria Paralia Skotinas [13], beach, 19 Sept 1988 net 1ms, 1fa (NMP 48561, 48562 [S+B]) Preveza Mesopotamo [14], water canal, 2 July 1989 net 2fa (NMP 48705, 48706 [S+B]) – Thesprotia Asprokklissi [15] above pool, 1 July 1989 net 1ma, 1fa (NMP 48703, 48704 [S+B]) – Thessaloniki Rendina [16], 1 km E, 28 July 2000 net 5m, 3f – Aegean Is Mikonos, Kalamopodi [17], camping, 5 Oct 2000 det 1 md, – Skiathos [18], Kapriso, 16–21 Oct 1973 1m, 6f (SMF 45213–45219 [S+B], leg G Storch & D Kock), – Thira, Perissa [19], 10–11 Oct 2000 det 2 3 md – Crete Agia Roumeli [20], 14 July 1995 det ca 30 md, – Gerani [21], rocky canyon, 16 July 1995 det 1 md, – Hania [22], castle, 9 July 1995 obs ca 20 md, Paralia [23], 7 and 12 July 1996 det min 5 md (leg J Gaisler) – Ionian Is Kerkira Messongi [24], 10 July 1995 det max 5 md (leg J Gaisler), – Kerkira Potamos [25] 1m, 2f (BMNH, cf Miller 1912) – **Published data** Ahaia Kalanos (n Kalavrita) [26], 20 Jan 1974 1f (Iliopoulou-Georgudaki 1977, 1985), Kastritsi [27], 1972–1982 12m, 14f (Iliopoulou-Georgudaki 1985), – Patras [= Patra] [28], 5 June 1908 1m 1f (Miller 1912, Hopkins & Rotschild 1956, Peus 1954), Patras, university campus, 18 md (Iliopoulou Georgudaki 1977), – Rododafni, resp Rododaphni [29], 2 June 1968 1f (Iliopoulou Georgudaki 1977, 1985) – Arkadia Tegea [30], 16 August 1960 2m, 3f (Kahmann 1964, Kock et al 1972) Attiki - Piraeus Athens [= Athina] [31], 1992–1995, the calls detected on 18 sites throughout whole metropolitan area of Athens (Legakis et al 2000) Evros Dadia Forest Reserve [32] (*Adamakopoulos et al 1995*) – Fokida *Amfissa* [3], hotel, 10 March 1971 *colony (coll 1m 1f)* (Niethammer 1974) – Halkidiki Marathoussa [33], 1982 1f (Volleth 1987), – Chalkidiki [= Halkidiki], no exact loc, 13 March 1963 (Pieper 1965) Messinia Hora [34], Trifilia, resp Chora Triphylias, 10 May 1968 5f (Iliopoulou-Georgudaki 1977, 1985), – Valira, resp Valyra [35], 28 Dec 1977 2f (Iliopoulou-Georgudaki 1977, 1985) – Serres Megalohori, resp Megalochori [36], 5 Dec 1974 1f (Iliopoulou-Georgudaki 1977, 1985) – Thessaloniki Nimfopetra [37], 5 May 1977 1 md (from owl pellets) (Pieper 1978) – Stavros [38], 13 March 1963 (Pieper 1965) – Aegean Is Euboea [= Evia] [39] (as *Nannugo marginatus*, Lindermayer 1855, Kolenati 1859) – Rhodos [= Rodos] [40] ("möglicherweise") (Pieper 1966) – Crete Agya [= Agia], dam 10 km SW of Hania [41], 6 April 1943 1 md (Pohle 1953), – Chania [= Hania] [22], 21 May 1942 1 md, 24 May 1942 1 md (Pohle 1953) – Kissamo Kastelli [= Kissamou Kastelli] [42], 22 April 1942 1 md, 26 April 1942 1 md (Pohle 1953) – Kourna [= Kournas] lake (n Mouri) [43], 15 April 1958 1f (Kahmann 1959, Felten & Storch 1970, Kock et al 1972) Rethymno [= Rethimno] [44], 19 April 1974 1m, 1f (Iliopoulou-Georgudaki 1985), – Sarchos [= Sarhos] [45], 3 md (from owl pellets) (Pieper 1977), – Topolia [46], 4 md (from owl pellets) (Pieper 1977) – Ionian Is Cephalonia [= Kefalonia], Argostoli, resp Agostoli [47], 5 May 1908 10 md (3m, 1f) (Miller 1912, Hopkins & Rotschild 1956, Peus 1954, Harrison & Bates 1991), – Corfu [= Kerkira] [925] 1m, 1f (Miller 1912), – Korfu [= Kerkira], Kritika [48], 27 March 1961 2m, 1 md (Niethammer 1962), – Korfu [= Kérkira], Korfu-Stadt [= Kerkira] [49], 30 April 1961 2f (Niethammer 1962), – Levkas [= Lefkada] [50] 1933 1f (Wettstein 1941), – Zakinthos, resp Zante Lagkadakia, resp Lagadakia [51], 20 April 1974 2f (Iliopoulou-Georgudaki 1977, 1985)

Distributional status (Fig. 16). This species characterised by a circummediterranean distribution in Europe, apparently occurs in most of the territory of Greece but chiefly in coastal regions and on islands (at least nine, including Crete). However, it almost has not been found in Thrace (for that matter, it has only recently been documented in south-western and south-eastern Bulgaria and Turkish Thrace (Ivanova & Popov 1994, Benda & Horaček 1998, J Červený in litt.) nor in the mountain regions of western Macedonia (see also Helversen in Mitchell-Jones et al 1999). The species is mainly confined to extensive floodplains of large rivers (Axios, Evrotas and Strimonas rivers), coastal regions and islands as well as human settlements including large towns, often bone remains of this species have been found in owl pellets. The Balkan part of its range joins the Adriatic

coasts of Dalmatia and Albania (see Mitchell-Jones et al. 1999); in the Rep. of Macedonia it has been recorded mostly in the floodplain of the Vardar [Axios] River (Kryštufek et al. 1992, Stojanovski 1994), one record comes from montaneous part of the Bregalnica River valley (Kryštufek et al. 1998). While the western limit of its Balkan range reaches up to central Europe (Austria, Hungary), the north-eastern border of Greece essentially forms part of the northern limit of distribution of the species in south-eastern Europe (see Kryštufek et al. 1998, Mitchell-Jones et al. 1999). External and cranial dimensions of examined specimens of *P. kuhlii* from Greece are shown in Tab. 4.

Nyctalus noctula (Schreber, 1774)

Records **Original datum** Evros Didimotiho [1], cave, 21 June 1994 remains of 3 ind. in *Tyto alba* pellets (leg. V. Vohralik) – Kardítsa Anthiro [2], Tavropos river, 31 August 2001 net, 1fa (NMP 49032 [S+A]) – Thessaloniki Rendina [3], 1 km E, 28 July 2000 net 3m, 6f (coll. 1ma, MHNG 1807.050 [S+A]) – Aegean Is. Thassos, Theologos [4], above creek, 25 June 1989 net 1ma (NMP 48695 [S+B]). **Published data** Evros Dadia Forest Reserve [5] (Adamakopoulos et al. 1995). – Provatonas river (= Provató) [6], 21 July 1997 net 1m (Ivanova 2000). Ioannina Mikrá (= Milea) [7], N. P. Valia-Calda, Zesto Réma, July 1985 obs. (Tsunis 1987). – Korintia Corinth [= Kórinthos] [8], 8f, 4 ind. (Müller 1912). – Thessaloniki Stavros [9], middle of August 1985 and August/Sept. 1987 "tufenden München stammen von Balzquartieren" (Weid 1994). – Aegean Is. Euboea [= Evia] [10] (Lindermayer 1855, Kolenati 1859). – About two old specimens in Collections of University Patras, without other details, mentioned Iliopoulou-Georgudaki (1977).

Distributional status (Fig. 8). Available records document the summer occurrence of *N. noctula* in the wooded region of northern and central Greece (see also Helversen in Mitchell-Jones et al. 1999), isolated, southern, and marginal records (Euboea, Attica, N Peloponnese) may pertain only to stray bats during migration. Essentially, this corresponds to the situation in the neighbouring Balkan countries in which the species is chiefly known to occur during the migration period or in winter. However, it is possible that the wooded regions of NE Greece may be inhabited by permanent populations, including nursery colonies; the same may be expected in the wooded regions of adjacent countries (our documented records of subadult individuals in Bulgaria in summer, Hanák & Josifov 1959, own data); this assumption is supported by much more southerly records of nursery colonies found in the Levant (Mendelsson & Yom-Tov 1999, own data) or in Iberia (Ruedi et al. 1998). However, the more southern part of Greece apparently lies beyond the permanent range of this species. The above tentative conclusions, however, require confirmation by additional data obtained from all parts of the Balkans and especially of direct observations made during the short nursing period of that species. External and cranial dimensions of examined specimens of *N. noctula* from Greece are shown in Tab. 5.

Nyctalus leisleri (Kuhl, 1817)

Records **Original data** Florina Papagiannis [1], river, 2 Sept. 2001 net, 2ms (NMP 49042, 49043 [S+A]) – Fthiotida Kombotades [2], above the Sperhiás river, 9 Sept. 1996, net 1ma (NMP 48724 [S+A]) – Grevena: Dimitra [3], a river 3 km E, 1 Sept. 2001 net 1ms, 1fa (NMP 49038, 49039 [S+A]) – Ioannina Papigo [4], Dracolimni lake, 25 Sept. 1988 found 1 dead ind. (NMP 48739 [S]) – Kardítsa: Anthiro [5], Tavropos river, 31 August 2001 net 4m, 3f (coll. 2ma, 1ms, 1fa, 1fs, NMP 49033–49037 [S+A]). – Pieria Paralia Skotinas [6], beach, 19 Sept. 1988 net 1fs (NMP 48566 [S+B]) – Xanthi Xanthi, road 8 km NW [7], 25 June 1989 net 1ma (NMP 48631 [S+B]) – Aegean Is. Rodos, Afandou [8], olive-tree wood, 11 Sept. 2001 det. 2 ind. (leg. J. Gaisler) – **Published data** Arkadia Davia [9], 6 July 1986: net 2m (Helversen & Weid 1990) – Attiki – Pireas Dekelion [= Dekéleia] [10], 1m, 1f (Winge 1881, rev. Pieper 1978). Drama Dipotama [11], 30 August 1987 1m (Helversen & Weid 1990); – Mikroklissoúra [12], creek, 4 Sept. 1983 net 2m (Helversen & Weid 1990). – Sidirónero [13], Nestos river, 6 Sept. 1983: 1m (Helversen & Weid 1990). – Evros Diavolorema river (10 km W Dadia) [14], 19 July 1997 net 1m (Ivanova 2000). – Florina Bigla [= Vigla] Mt. [15], n. Álona, Vérno Mts., 22 July–7 August 1988 net 25m (Helversen & Weid 1990), n.

Tab 5 External and cranial dimensions of examined specimens of genera *Nyctalus* Bowdich, 1825 and *Miniopterus* Bonaparte, 1837 from Greece For abbreviations see text

No	locality	sex	LC	LCd	LAt	LA	LTr	G	LCr	LCb	LaZ	Lal	LaN	AN	CC	M¹M³	CM³	LMd	ACo	CM₁
Nyctalus noctula																				
NMP 48695	Thássos Is	m	77	50	52 1	16 5	9 0	32 0	17 82	18.52	12.60	4.79	9 21	6.46	7.17	8 46	7 09	13 75	4,26	7.43
NMP 49032	Anthiro	f	75	51	52 8	18.9	6 7	26 2	18 03	18.32	12 80	5 05	9 65	6.55	6.94	8 54	7 35	13 87	4,57	7.77
Nyctalus leisleri																				
NMP 48566	P Skotinas	f	65	45	43 9	14 0	6.5	14 5	14 66	15 00	9 97	4 47	8 00	5 17	5 47	6 46	5 70	11,33	3 17	6.13
NMP 48631	Xánthi	m	68	41	41 9	13 0	5 5	14 5	15 29	15 73	10 36	4,65	7 98	5 31	–	7 12	5 87	11 78	3,17	6 27
NMP 48724	Kombotádes	m	61	45	43 6	14 1	6 4	11 2	15 54	15 60	10 47	4,76	8 13	5 73	5 72	6 87	5.94	11 63	3,18	6.30
NMP 48739	Drakolímni	–	–	–	43 0	–	–	–	14 72	14 85	9 85	4 55	8 00	5 64	5 54	6 98	5.52	11 28	3,17	5.96
NMP 49033	Anthiro	m	63	42	43 4	15 5	6 2	15 4	15 59	16 01	10 53	4 62	8 25	5.65	5 82	7,14	5 65	11 67	3,32	6.27
NMP 49034	Anthiro	m	66	45	42 4	16 6	6 7	16.1	15 68	15 83	10 07	4 40	8 37	5 58	5 58	6 97	5 93	11 78	3,19	6.32
NMP 49035	Anthiro	m	64	45	44 0	16 7	6 8	16 3	15 27	15 43	10,43	4 65	7 98	5 37	5 78	7 11	5 75	11,43	3 15	6.26
NMP 49036	Anthiro	f	62	47	42,7	17 0	6 6	12 0	15 05	14,90	9,88	4 78	8,04	–	5,43	6 73	5.67	11,20	3 04	5 97
NMP 49037	Anthiro	f	70	44	43 8	16 8	6 6	17 2	15 20	15 37	10 25	4 82	8 13	5 49	5,78	7 22	5 82	11,42	3 00	6.15
NMP 49038	Dimitra	m	69	43	43 1	16 8	6 6	12 1	15 26	15,52	10 68	4,68	8 42	5 52	5 66	7 07	5 78	11,52	3,10	6.12
NMP 49039	Dimitra	f	69	48	44 7	16 7	6 2	13 1	15 77	16 08	10 62	4 82	8 30	5 74	5 90	7 42	6 03	11 82	3,35	6.37
NMP 49042	Papagiannis	m	69	42	43 3	15 8	6 1	11 1	15 03	15 25	10 41	4 77	8 22	5,52	5 62	6 90	5 77	11 48	3,22	6.08
NMP 49043	Papagiannis	m	69	43	42 1	18 1	6 6	11 8	15 19	15 50	10 17	4 62	8 12	5,59	5,59	7,01	5 80	11 52	3,25	6 07
Nyctalus lasiopterus																				
NMP 49031	Anthiró	m	98	64	65 1	24 7	9 2	53 5	21 77	22 08	15 57	5 66	11 52	8 05	8 93	10 13	8 64	17 53	5 05	9.32
Miniopterus schreibersii																				
NMP 48578	Pappigo	f	56	58	45 2	11 0	6 0	14.0	15 15	14.88	8 53	3 48	8 10	6 39	4 67	6 35	5 99	10 88	2,52	6 31
NMP 48579	Pappigo	f	51	62	45 8	11 0	6 0	14 0	15.06	14 67	8 36	3 43	7 90	6 27	4 20	6 27	5 91	10 62	2 52	6 35
NMP 48610	Petrálona	m	53	52	45 7	10 0	7 0	–	15 25	14 82	8 78	3 72	8 06	6 35	4 68	6 41	6.05	–	–	–
NMP 48611	Petrálona	f	53	52	45 6	12 0	6 5	–	15 30	14 92	8 76	3 58	8 18	6 27	4 57	6 36	6 02	10 91	2 58	6 30
NMP 48622	Kimméria	f	57	55	44 3	10 5	7 0	14 0	14 98	14 71	–	3 58	8.02	6.35	4 48	6.22	5 85	10 65	2.57	6.25
NMP 48623	Kimméria	m	56	54	44.5	11 0	5.5	12 0	15 28	14.80	8 45	3 60	8 20	6 34	4 60	6 43	5 94	10.80	2 48	6.26
NMP 48624	Kimméria	f	55	54	45 0	11 5	6 5	13,0	14.93	14 45	8 43	3 48	8.02	6 05	4 37	6 30	5 87	10.61	2 25	6.25
NMP 48625	Kimméria	m	54	58	44.0	11 0	6 0	13.0	14 93	14 70	8.57	3 56	8 05	6 38	4 55	6 34	5 90	10 74	2,36	6 22
NMP 48632	Maróna	f	56	63	45 4	10 0	7 0	13.5	15.17	14 84	8.53	3 84	8 15	6 45	4.57	6.45	5.98	10 73	2.45	6.25
NMP 48633	Maróna	f	55	60	45 0	11.5	7 0	12.5	15 02	14 55	8 47	3.55	7 97	6.27	4 55	6.20	5.94	10 68	2 43	6 25
NMP 48642	Maróna	m	57	56	44 5	11 0	6 5	14 0	15 00	14.60	8.73	3 70	8 13	6 43	4 62	6 37	5.83	10 65	2 47	6 23
NMP 48657	Ávas	m	58	58	43 8	11 5	6 0	13.0	15.16	14.64	8.62	3 52	8 17	6 54	4 55	6.35	5 93	10 78	2 43	6.25
NMP 48665	Didimótiho	f	58	53	45 0	10 0	6 5	13.5	14.91	14 58	8 59	3.58	7.86	6.26	4.65	6.43	5.90	10 62	2 53	6 25
NMP 48666	Didimótiho	m	57	56	47 1	12.0	7.0	13,5	15 02	14 65	8 58	3 48	8 02	6 40	4 43	6 45	5 82	–	–	–
NMP 48667	Didimótiho	f	59	61	44 8	11.5	7 0	14 0	15 13	14 80	8 58	3.66	7 90	6 18	4 74	6 44	5 82	10 92	2 84	6 15

Pisoderi pass, August 1988, 1989 and 1990 (Helversen & Helversen 1994) – Fthiotida Agios Georgios [16], Spercheios [= Sperhias] river valley, 25 May 1983 net 1m (Helversen & Weid 1990), – Makri [17], Spercheios [= Sperhias] river valley 22 May 1983 1m (Helversen & Weid 1990), – Vitoli [18], 1 June 198? 1m (Helversen & Weid 1990) – Kardítsa Rendina [19], 29 May 1988 1m (Helversen & Weid 1990), – Zaimi [20] creek 27 May 1983 1m (Helversen & Weid 1990) – Kastoria Gavros [21], Ladopotamos river, 8 August 1988 net 1m, 17 August 1988 net 1m (Helversen & Weid 1990), – Pefkofito [22], Sarantaporos river, 4 August 1988 1m (Helversen & Weid 1990), – Pevkos [= Pefkos] [23], Aliakmon [= Aliakmonas] river, 21 August 1982 1m (Helversen & Weid 1990 cf Volleth 1987), – "Bergsee unterhalb" Mt Epano Arena [24], 24 August 1987 1m (Helversen & Weid 1990) – Pella Aridea [25], creek W, 31 August 1982 net 5m, 11 (Helversen & Weid 1990) – Thessaloniki Rendina [26] plane-tree wood, August–October 1983–1988 net several ind (Helversen & Weid 1990) – Stavros [27], plane tree wood 16 Sept 1983 net 1m (Helversen & Weid 1990) Xanthi Vistonis-See [= Limni Vistonida] [28] mouth of Kompsatos creek, 21 June 1987 net 1m (Helversen & Weid 1990)

DISTRIBUTIONAL STATUS (Fig 5) The Greek records of *N leisleri* given above are unexpectedly numerous in an area considered to be marginal of the whole range of the species Moreover, those records document its occurrence throughout the territory of Greece, including Peloponnese, even though they are more frequent and more numerous in its northern and central parts So far, *N leisleri* has not been ascertained on Crete, yet it is known from Northern Africa (Hanák & Gaisler 1983) The species is known from the only Greek island, Rhodes, this record is not surprizing because in south-western part of Asia Minor *N leisleri* was recorded (Helversen 1989b) This current situation is rather different from the status known from the neighbouring countries in the Balkans (Mitic & Paunovic 1997), where only individual and occasional records are available, even from Bulgaria, a thoroughly investigated country (Ivanova 1995, own data)

It is necessary to stress that most of the records in Greece come from the period of August and September, also, *males distinctly predominate in netted samples* Nevertheless, there are also a number of records which fall in the period of the breeding season (May–July) In any case, most of records can be attributed to seasonal migrations from the northwardly situated regions and some of them are remarkable for their unusual circumstances (for example, the individual netted near the sea shore in Pieria (Macedonia), the find of a dead specimen on the shore of the Drakolimni lake in Pindus Mts , at 2250 m a s l) Nevertheless, records made in early summer, confirm the possible existence of a permanent population, at least in the wooded regions of Macedonia, Thrace, and Sterea Ellada Although mostly males have been recorded so far, one cannot rule out the existence of nursery colonies, considering that the species permanently occurs and breeds, for instance, in Cyrenaica, Libya (Hanák & Gaisler 1983), that is, much more to the south Likewise, the species has been repeatedly found in southern Iberia (Ibañez et al 1992) This conclusion is also supported by the overall frequency of records of *N leisleri* in Greece, which markedly exceeds the number of documents of *N noctula*, a species which is more common and more conspicuous elsewhere One may hypothesis that within the guild represented by the genus *Nyctalus*, *N leisleri* (and probably also *N lasiopterus*) occupied empty niche south of the limit of the range of *N noctula*, a species which is dominant elsewhere External and cranial dimensions of examined specimens of *N leisleri* from Greece are shown in Tab 5

Nyctalus lasiopterus (Schreber, 1780)

RECORDS **Original datum** Kardítsa Anthiro [1] Tavropos river, 31 August 2001 net 1ma (NMP 49031 [S+A]) – **Published data** Drama Arkoudorrema river mouth [2], 3 km NW of Paraneston [= Paranesti], 23 June 1984 1m (Helversen & Weid 1990), Paraneston [= Paranesti] [3] N forest, June 198? obs 10–15 ind (Helversen & Weid 1990) – Fthiotida Makri [4], Spercheios [= Sperhias] river valley, 2♀ 2 May 1983 2m (Helversen & Weid 1990, cf Volleth 1987) Grevena Samarina [5] Smolikas river, 2♀ 6 July 1978 1m (Helversen & Weid 1990) Halkidiki Marathousa [6], creek, 31 July 1982 1m (Helversen & Weid 1990)

– Karditsa Rentina [7], 29 May 1988 net 1m (Helversen & Weid 1990) – Thessaloniki Rendina [8], Sept –Oct 1983–1987, obs , some ind net , Sept –Oct 1988 net 6m, 1f (Helversen & Weid 1990) – Trikala Pertuli [= Pertouli] [9], 9 June 1964, colony in tree hole (coll 3f) (Wolf 1964) – Xanthi Mandra [10], 1 km SE, 27 Sept 1966 1ma (Helversen & Weid 1990) – About one old specimen in Collections of University Patras, without other details, mentioned Ilopoulou-Georgudaki (1977)

DISTRIBUTIONAL STATUS (Fig 11) The number of records of *N lasiopterus* in Greece presented here, is surprizingly large compared with data from neighbouring countries Most records are quite recent (Helversen & Weid 1990, Helversen in Mitchell-Jones et al 1999), but there is even a record of a nursery colony (Wolf 1964). Thus, there are sufficient reliable data to suggest that the whole territory of mainland Greece is part of the range of this species, the same as for other regions of submediterranean Europe (cf Mitchell-Jones et al 1999) So far, no data are available from islands but the species can be expected on some of the more wooded ones (Thassos, Crete, Ionian Islands), judging from its occurrence further south, in Cyrenaica, Libya (Spitzenberger 1982, Qumsiyeh & Schlitter 1982) Apparently, the species is tied to wooded regions from lowlands up to mountains (Pindus Mts 1200 m a s l), and its range is almost circummediterranean External and cranial dimensions of examined specimen of *N lasiopterus* from Greece are shown in Tab. 5

Barbastella barbastellus (Schreber, 1774)

RECORDS **Published data** Fthiotida Agios Georgios [1], 1985 1f (Volleth 1987), – Mt Katavotron [= Katavothra] [2] Georgopotamos river, cave, 9 August 1988 3m, 2f (Helversen & Weid 1990), – Vitoli [3], creek valley 1 June 1985 net 1f (Helversen & Weid 1990)

DISTRIBUTIONAL STATUS (Fig 21) In Greece, *B barbastellus* was documented for the first time by three records in Sterea Ellada (Helversen & Weid 1990, Volleth 1987) These records suggest its potential occurrence in the Balkans, previously documented by records from Bulgaria (Heinrich 1936, Horaček et al 1974, Ivanova 1998, etc), the Rep of Macedonia (Đulic & Mikuška 1966) and Turkish Thrace (Benda & Horáček 1998) Further investigations are needed to show whether its occurrence in the south of the Balkans is only marginal in mountain woodlands or is more continuous Since Ibañez et al (1992) have demonstrated the widespread occurrence of the species in Iberia and since the species is known from North-western Africa as well (Panouse 1955), its more southern and more common occurrence may also be expected in Greece

Plecotus auritus (Linnaeus, 1758)

RECORDS **Original datum** Pieria Paralia Skotinas [1] beach, 19 Sept 1988 net 1ma (NMP 48567 [S+B]) – **Published data** Achaia Zahlorou [2], 2m, 5f (Ilopoulou-Georgudaki 1977) – Attiki-Pireas Athens [= Athina] Nea Filadelfia, Prompona [3] 1992–1995 detected calls (Legakis et al 2000), – Dekelion [= Dekeleia] [4], 1m (Winge 1881) – Florina Vernon [= Verno] Mts [5], "Buchenwaldzone", 28 July 1988 net 1f (Helversen & Weid 1990) – Fthiotida Oiti [= Iti] Mts [6] Georgopotamos river, cave, 18 August 1981 net 1m, 1f, 9 August 1988 2m, 1f (Helversen & Weid 1990) Grevena Samarina [7] Smolikas Mts , 26 July 1978 net 1f (Helversen & Weid 1990) Ioannina Ioannina [8], in a house 1m (Ilopoulou-Georgudaki 1977) – Kastoria Mt Epano Arena [9], small lake, 24 August 1987 net 1m, 2f (Helversen & Weid 1990) – Aegean Is Santorini [= Thira], n Pyrgos [10], May 1892 1 ind (Douglas 1892) – Crete Topolia, 1–11 ind (from owl pellets) (Pieper 1977), this record is considered here as of *P cf kolombatovici*

DISTRIBUTIONAL STATUS (Fig 18) The list of records suggest occurrence of this woodland species in at least seven localities in mainland Greece Most of them pertain to mountain regions in northern and central Greece (elevations up to 1600 m) but specimens are also available from the sea shore, the southernmost one from northern Peloponnese Hence, *P auritus* appears to be uncommon in Greece, its occurrence being rather patchy in woodlands at higher elevations In the light of the

recent taxonomic changes (see Taxonomic note) the record of *P. auritus* from Crete based on skeletal remains in owl pellets (Pieper 1977), appears to be doubtful. Likewise, the old records by Winge (1881) and Douglas (1892) from Attica and from Santorini (Thira) Island may pertain to another *Plecotus* species the specific status of which has been established only in more recent time and whose ecology is in better accordance with the Mediterranean conditions of those localities (viz., *P. austriacus* and/or *P. kolombatovici*). The record of detected call published by Legakis et al. (2000) is appropriate to consider doubtfull specific identification because of unfeasibility of clear definition of the individual *Plecotus* species by using an ultrasound detector (Weid & Helversen 1987, Barataud 1996, etc.). External and cranial dimensions of examined specimens of bats of the genus *Plecotus* from Greece are shown in Tab. 6.

TAXONOMIC NOTE. In their taxonomic revision of bats of the genus *Plecotus* from central and SE Europe, Spitzenberger et al. (2001) defined three distinct species in that region, viz., *P. auritus* (Linnaeus, 1758) (terra typica: Uppsala, Sweden), *P. austriacus* (Fischer, 1829) (t. t.: Vienna, Austria), and *P. kolombatovici* Đulić, 1980 (t. t.: Žrnovo, Korčula Is., Croatia). The systematic position of *P. auritus* has essentially not been altered and thus its geographic distribution need not be revised. It cannot be ruled out, however, that some of the records attributed to this species pertain in fact to *P. kolombatovici* which has been described as a species resembling, in some of its cranial dimensions, *P. auritus*, see Fig. 19 and Tab. 6 (comp. Spitzenberger et al. 2001). In particular, this may concern some of the southern populations included so far in *P. auritus*, particularly those found in southern Europe (Italy, Dalmatia, the Balkans) and in central and southern Anatolia (cf. Albayrak 1991, Benda & Horáček 1998, Spitzenberger et al. 2001) could be in this case. Of the Greek records, some doubts have thus been thrown especially on the record from Crete (Pieper 1977), here tentatively reconsidered as *P* cf. *kolombatovici* (because occurrence of *P. kolombatovici* on Crete was confirmed, see below and Helversen & Weid 1989). The same is true of the records by Douglas (1892) from Santorini (Thira) and by Winge (1881) from Attica, see above. Concerning our own material of Greek bats, the specimen from Thessaly corresponds to the characters of *P. auritus* in the sense of Spitzenberger et al. (2001).

Plecotus austriacus (Fischer, 1829) s. l.

RECORDS. **Original data**. Florina: Pili [1], 3 km E, 13 July 2000, net, 1ma (MHNG 1807.029 [S+A]). – Halkidiki, Halkidiki (no exact loc.), 28 May 1962, 1 ind. (MKB 7749, leg. Wolf). – Ilia: Kástro [2], Hlemoutsi castle ruins, 23 August 2001, obs. 1 ind. – Korinthia: Archea Korinthos, Akrokorinthos [3], castle ruins, 30 August 2001, obs. 1 ind. – Lakonia: Mistras [4], ruins of Byzantine town, 27 August 2001, obs. 1 ind. – Aegean Is.: Samothraki, Hora [= Samothráki] [5], cave, 10 July 1994, net, 2ma. – Crete: Agia Roumeli [6], village, 14 July 1995, obs. 5 ind. – Stavrós (Akrotiri pen.) [7], cave, 10 July 1995, net, 1fal. **Published data**. Évros: cave Kamila (n. Dadia) [8], 24 July 1997, net, 1m (Ivanova 2000). – Crete: Topólia, 1 ♀, 11 ind. (from owl pellets) (Pieper 1977), this record is considered here as of *P.* cf. *kolombatovici*.

Plecotus austriacus (Fischer, 1829) s. str.

RECORDS. **Original data**. Florina: Papagiannis [1], river, 2 Sept. 2001, net, 1fa (NMP 49045 [S+A]). – Pili [2], 3 km E, 13 July 2000, net, 1ma (MHNG 1807.030 [S+A]). – Halkidiki: Petrálona [3], cave, 26 Sept. 1988, net, 1ms, 28 Sept. 1988, net, 1m (NMP 48609 [S+B]). – Trikala, Meteóra [4], 1m (SMF 23025 leg. G. Link, G. Storch, and H. Wohlang, cf. Kock 1969, 1974, Kock et al. 1972, Felten & Storch 1970). **Published data**. Évros: N of Dhikella [= Dikella] [5], 1966, 6 ind. (Spitzenberger et al. 2001). – Makri [6], cave Kiklopos, 1m (Ilhopoulou-Georgudaki 1977), Mákri, 1966, 1 ind. (Spitzenberger et al. 2001). – Fokida: Delphi [= Delfí] [7], 1979, 1f (Spitzenberger et al. 2001).

DISTRIBUTIONAL STATUS (Fig. 18). So far the occurrence of *P. austriacus* s. str. (in the sense of Spitzenberger et al. 2001) has been reliably documented in only seven localities, five in the north of Greece

and two in central Greece. However, a number of additional records are available (see the records of *P. austriacus* s. l.), of which specially those in mainland Greece may also pertain to *P. austriacus* s. str.

TAXONOMIC NOTE. The records of *P. austriacus* s. l. from the whole of SE Europe, particularly from the western part of the Balkans and Dalmatia, should be evaluated in the light of the new definition of *P. kolombatovici*. Originally, *P. kolombatovici* had been described as a subspecies of *P. austriacus* which was thought to inhabit the Mediterranean part of Croatia and Hercegovina (Đulić 1980). Spitzenberger et al. (2001) describe the tentative range of *P. kolombatovici* as a belt along the Adriatic coast from the Alps (incl. southern Austria) down to Greece. Although the authors do not state the degree of sympatry of the two forms in that region, it is clear that in order to reliably define the ranges of *P. austriacus* s. str. and *P. kolombatovici* it is necessary to revise their records from the whole of SE Europe including those from Greece. Some specimens revised by us, previously determined as *P. austriacus* (s. l.), has confirmed the correct specific determination as *P. austriacus* s. str. in the sense of Spitzenberger et al. (2001), see Tab. 6. These include the specimen from

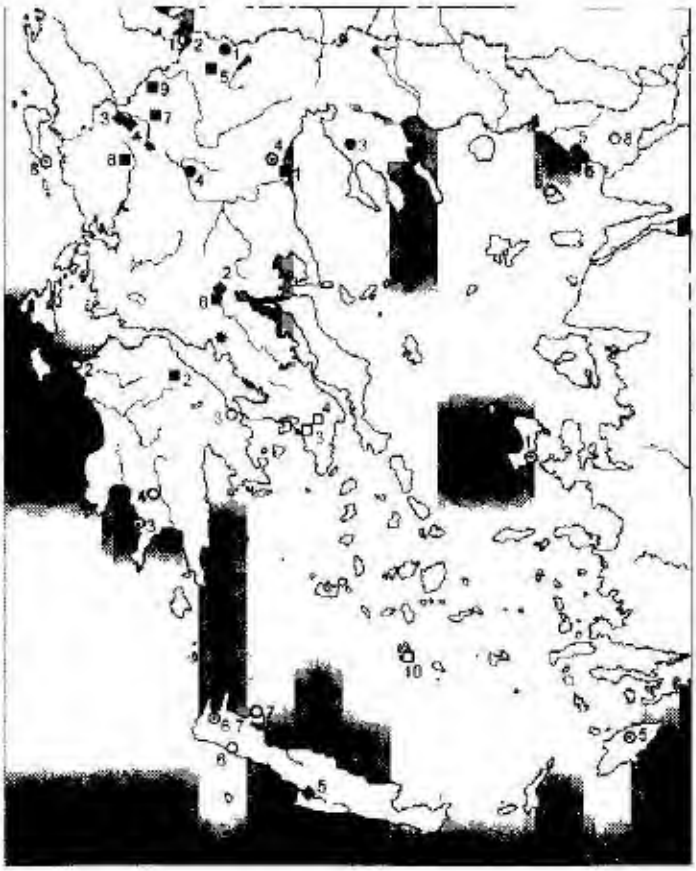

Fig. 18. Records of bats of genus *Plecotus* Geoffroy, 1818 in Greece. Symbol explanations: ■ = *P. auritus* (Linnaeus, 1758) s. str., □ = *P. auritus* s. l. (= *Plecotus* sp.), ○ = *P. austriacus* (Fischer, 1829) s. l.; ● = *P. austriacus* (Fischer, 1829) s. str., ◆ = *P. kolombatovici* Đulić, 1980, ⊙ = *P.* cf. *kolombatovici*; ✱ = site, where three forms of *Plecotus* were found (*P. austriacus*, *P. kolombatovici* and *P.* cf. *kolombatovici*)

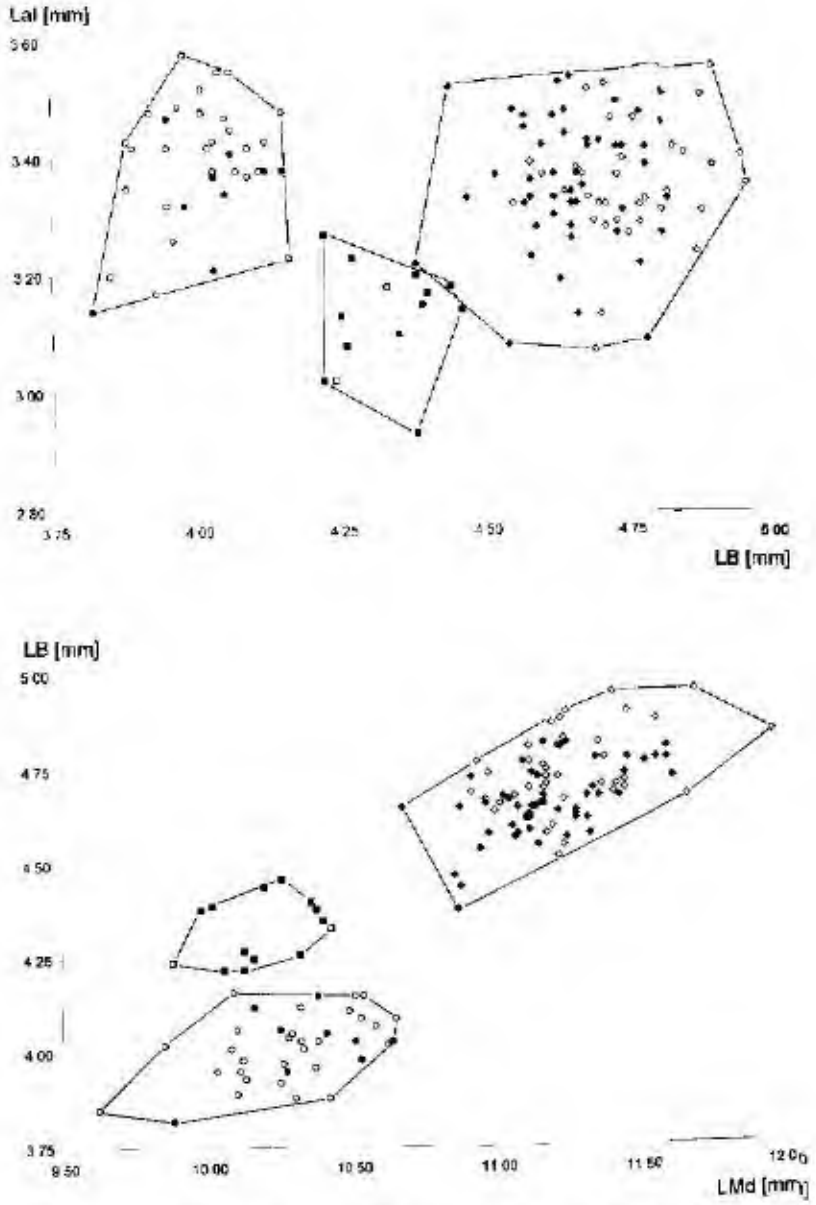

Fig. 19 Bivariate comparison of cranial dimensions of bats of genus *Plecotus* from Greece and from Central Europe above – comparison of length of tympanic bulla (LB) versus width of interorbital constriction (LaI) (adopted from Dulic 1980) below – comparison of mandible length (LMd) versus length of tympanic bulla (LB) Symbol explanations circles – *P. auritus* (Linnaeus, 1758), diamonds – *P. austriacus* (Fischer, 1829) squares – *P. kolombatovici* Dulic 1980 and *P.* cf. *kolombatovici*, open symbols denote the specimens from Central Europe or from Croatia respectively (see Appendix II for the list of comparative material), closed symbols denote the specimens from the Balkans incl. Greek ones (see Record lists of the respective species)

Thessaly (SMF 23025, the record was already published, see Kock 1969, 1974, etc , see above), two newly recorded specimens from Macedonia (NMP 48609, 49045) and one of the individuals collected in Pili, Macedonia (MHNG 1807 030) that was identified genetically as *P austriacus* s str The Macedonian record mentioned by Ilhopoulou-Georgudaki (1977) is also after given measurement appropriate to consider as of *P austriacus* s str (comp Tab 6)

Plecotus kolombatovici Dulić, 1980

Record **Original data** Fokida Delfi [1] 23 Sept 1988 net 1ms (NMP 48569 [S]) – Fthiotida Kombotades [2], above the Spercias river, 9 Sept 1996 net 1fa (NMP 48725 [S+A]), Kombotades, cave, 10 Sept 1996 net 3ma (NMP 48726–48728 [S+A]) Ioannina Kleidonia [3], Voidomatis river 27 Sept 1988 net 1m (NMP 48585 [S+B]), – Papigo [4], cave 26 Sept 1988 net 4ms (NMP 48573–48575 [S+B], 48576 [S]) Papigo, above creek 25 Sept 1988 net 1fa (NMP 48572 [S+B]) Crete Mires [5], old mine (Microlavi)

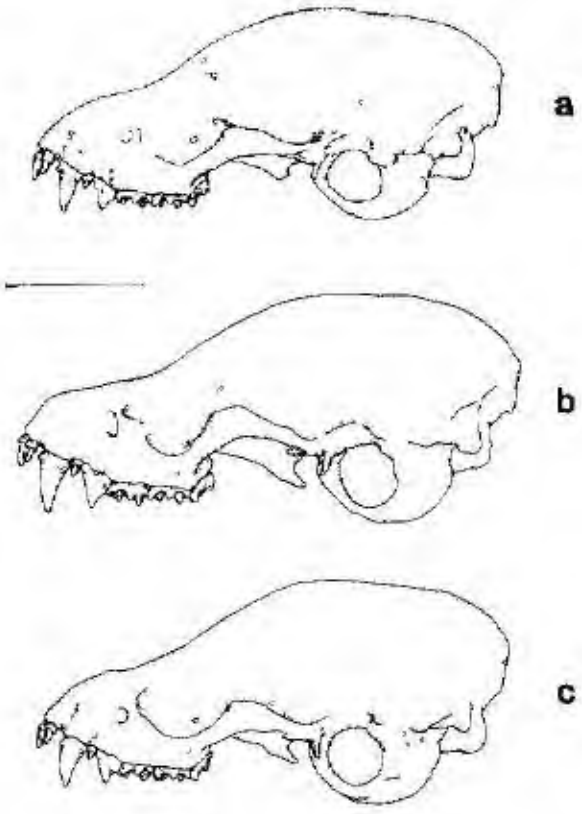

Fig 20 Skulls of bats of genus *Plecotus* from Greece a *Plecotus auritus* (Linnaeus 1758) (NMP 48567 male, Paralia Skotinas, Pieria). b *P austriacus* (Fischer, 1929) (NMP 49095, female, Papagianni, Florina). c – *P kolombatovici* Dulic, 1980 (NMP 48726, male, Kombotades, Fthiotida) Scale line – 5 mm

rynth), 2 April 1999: net. 1ma (M 582 [A]) – **Published datum** Fokida Delphi [= Delfi] [1], 1979: 2f (Spitzenberger et al. 2001).

Plecotus cf. *kolombatovici* Dulić, 1980

Records **Original data** Aegean Is.: Hios, Agia Fotia [1], 23 May 1972 1m (SMF 44918, cf. Kock 1974a) – **Published data** Fokida betw. Delphi [= Delfi] and Arakhova [= Aráhova] [2], 1933 1 ind. (Spitzenberger et al. 2001) – Messinia Trakhila [= Trahila] [3], 1982 1 ind. (Spitzenberger et al. 2001) – Pieria W of Litohoro [4], 1982 1 ind. (Spitzenberger et al. 2001) – Aegean Is.: Rhodos [= Rodos], S of Salachos [= Salakos] [5], 1971 1 ind. (Spitzenberger et al. 2001). – Crete Topolia [6], 12 ind. (from owl pellets) (as *Plecotus* sp., Pieper 1977). Topolia, cave Aghia Sophia [7], 16–17 March 1965 1f (Martens 1967) – Ionian Is.: Korfu [= Kérkira], Kritika [8], 27 March 1961 1m (Niethammer 1962).

Distributional status (Fig. 18) The occurrence of *P. kolombatovici* in mainland Greece was at first mentioned from a single locality in Sterea Ellada (Spitzenberger et al. 2001), to which we added another five records from Epirus, Sterea Ellada and Crete. The latter record was documented by genetical analysis of specimen's cytochrome b, which was very close to that of *P. kolombatovici* from Switzerland (Ruedi, unpubl. records). Considering minute bats of the genus *Plecotus* that are in external characters (coloration, thumb and face shape) close to *P. austriacus* and in metrical skull characters close to *P. auritus*, that is, morphologically closest to *P. kolombatovici* s. str. (= from Croatia) to be the representatives of this species (see Fig. 19), then *P. kolombatovici* is distributed over mainland Greece (except in Thrace and eastern Macedonia) from low elevations up to mountain localities (Pindus Mts., ca. 1200 m a. s. l.). This form (*P.* cf. *kolombatovici*) has also been recorded from two islands (Chios, Rhodes) and thus it is possible that even other insular records of *Plecotus* spp. (Thira [Douglas 1892], Crete [Martens 1967, Pieper 1977], Corfu [Niethammer 1962]) may belong to this form – cranial measuremets given by Niethammer (1962) and Martens (1967) agree with these of material of *P. kolombatovici* examined by us.

Taxonomic note. Spitzenberger et al. (2001) described the metric characters of *P. kolombatovici* on the basis of examinations of a total of 26 specimens from southern Austria. Besides, they presented several specimens fitting with their variation range of the Austrian population, coming from localities in Croatia, Bosnia, and two specimens from Sterea Ellada (Delphi). Thereby they have evidenced the occurrence of *P. kolombatovici* in Greece. Our material of Greek bats also contained several specimens showing similar metric characters as *P. kolombatovici* from Croatia, which we consider as representatives of this species (see Fig. 19 and Tab. 6). Nevertheless, Spitzenberger et al. (2001) mentioned another specimen from Asia Minor, resembling in its metric characters *P. kolombatovici* and *P. auritus*, but *P. austriacus* s. str. in genetic traits. They do not provide a definitive species identification for that specimen, and, correspondingly, we do the same with such bats from Aegean Islands here listed as *P.* cf. *kolombatovici*.

Miniopterus schreibersii (Kuhl, 1817)

Records **Original data** Achaia Kastria, Limnon cave [1], 17 May 1974 6f (MHNG 1712.021–026 [A]), 1–2 August 2000 net 1ma (MHNG 1807.064 [S+A]) – Argolida Kefalóvrisso [2], cave, 13 April 1978 1m (MHNG 1492.08) [A]) – Drâma Mikrópoli [3], cave, 25 March 1994 obs. large colony – Evros Avas [4], road 2 km S, 20 June 1989 net 1ms (NMP 48657 [S+B]). – Dadia [5], Tsoutsourou, galleries, 24 July 2000 obs. colony. – Didimótiho [6], cave, 22 June 1989 net 1ma, 2fa (NMP 48665–48667 [S+B]); – Koufovouno [7], cave, 22 July 2000 obs. colony – Halkidiki Petralona [8], cave, 28 Sept. 1988 net 1m, 1f (NMP 48610, 48611 [S+B]) – Ioannina Pápigo [9], cave, 16 Sept. 1988 net 2f (NMP 48578, 48579 [S]) Lakonia Gítheio [10], 16 August 1964 1m (WIC 11206). – Rodopi Maronia [11], Cave of the Cyclops Polyphemos, 18 June 1989 net 2fa (NMP 48632, 48633 [S+B]), 19 June 1989 net 1ma (NMP 48642 [S+B]) Serres Agios Ioannis Prodromos [12], cave Pelade, 17 July 2000 2f, river n. monastery, 17 July 2000, net 7m, 10f – Thessaloniki Rendina [13], 1 km E, 28 July 2000 net 1m – Xánthi Kimméria [14], gallery, 16 June

Tab. 6. External and cranial dimensions of examined specimens of genus *Plecotus* Geoffroy, 1818 from Greece. For abbreviations see text.

No.	sex	LC	LCd	LAt	LA	LTr	G	LCr	LCb	LCc	LaZ	LaI	LaN	AN	CC	M¹M¹	CM	LMd	ACo	CM₁	LB
Plecotus auritus																					
NMP 48567	m	44	47	38.4	36.0	17.0	7.5	16.40	15.08	14.45	8.85	3.32	8.38	5.13	3.92	6.07	5.40	10.53	2.72	5.81	4.03
Plecotus austriacus																					
NMP 48609	m	47	48	38.8	35.0	17.0	–	16.97	15.73	15.18	8.97	3.37	8.67	5.56	3.88	6.15	5.64	–	–	–	4.50
NMP 49045	f	54	52	41.0	37.7	17.5	10.9	17.35	16.32	15.68	9.28	3.47	8.83	5.59	4.12	6.55	6.25	11.23	3.37	6.62	4.81
SMF 23025	m	–	–	39.3	34.1	15.3	–	17.20	16.08	–	9.02	3.35	8.12	5.22	3.95	6.12	5.90	11.05	3.18	6.55	4.67
Plecotus kolombatovici (Greece)																					
NMP 48569	m	48	45	37.5	35.0	16.0	7.0	16.15	15.08	14.64	8.58	3.17	7.92	5.38	3.68	5.98	5.38	10.36	2.93	5.88	4.42
NMP 48572	f	49	51	39.4	35.0	17.0	8.5	16.35	15.32	14.88	8.36	2.93	7.62	5.25	3.57	5.80	5.35	10.38	3.02	5.79	4.38
NMP 48573	m	45	46	37.2	35.0	14.0	8.0	16.15	14.92	14.41	8.67	3.27	8.28	5.44	3.57	5.73	5.20	10.13	2.92	5.78	4.22
NMP 48574	m	47	43	37.4	36.0	16.0	7.5	16.43	15.18	14.64	8.61	3.15	8.20	5.45	3.54	5.88	5.37	10.02	2.98	5.78	4.39
NMP 48575	m	48	49	37.6	35.0	17.0	7.0	16.45	15.18	14.70	8.53	3.18	7.98	5.37	3.58	5.79	5.30	10.20	3.04	5.64	4.44
NMP 48576	m	46	43	36.1	33.0	17.0	7.0	15.87	14.88	14.33	8.36	3.20	7.97	5.39	3.58	5.72	5.15	9.98	2.84	5.65	4.38
NMP 48585	m	46	51	36.6	35.0	17.0	8.0	16.07	14.82	14.43	8.45	3.13	8.13	5.13	3.57	5.83	5.25	10.16	3.00	5.65	4.25
NMP 48725	f	49	47	38.5	34.4	13.7	7.0	15.93	14.68	14.15	8.52	3.02	8.00	5.25	3.65	5.77	5.35	10.06	3.05	5.88	4.22
NMP 48726	m	54	50	37.4	33.3	14.7	7.2	16.57	15.32	14.78	8.64	3.10	8.02	5.42	3.70	5.89	5.37	10.40	3.20	5.78	4.35
NMP 48727	m	53	51	36.3	35.1	15.5	6.6	15.92	14.87	14.42	8.57	3.23	8.37	5.37	3.75	6.08	5.48	10.13	2.98	5.83	4.27
NMP 48728	m	52	51	37.8	35.7	16.3	6.1	16.25	15.17	14.66	8.57	3.14	8.05	5.42	3.67	6.05	5.42	10.26	3.05	5.80	4.46
Plecotus kolombatovici (Croatia)																					
NMP 49091	m	50	47	36.8	38.0	16.8	7.0	16.23	15.02	14.35	8.46	3.02	7.62	5.33	3.52	5.82	5.15	9.88	2.73	5.68	4.24
NMP 49092	m	49	41	36.6	35.8	15.2	7.0	16.52	15.52	14.76	8.60	3.18	8.29	5.55	3.58	5.80	5.32	10.43	2.91	5.81	4.33
Plecotus cf. *kolombatovici* (Chios Island)																					
SMF 44918	m	–	–	37.4			–	16.68	15.37		–	8.47	3.08	7.94	5.27	3.65	5.82	5.34	10.32	2.97	5.37	4.26

1989 net 2ma, 2f (NMP 48622–48625 [S+B]), 20 July 2000 capt 10 ind. Aegean Is. Lesvos, Efthalou [15], ancient mine 4 km E, 14 Sept 2000 obs several ind., net 1ma (MHNG 1808.002 [S+A]). Lesvos, Vassilika [16] ancient mine 5.5 km E, 13 Sept 2000 obs 6 ind. – Crete. Gortis [17], Labyrinth, 3 ind. (ZIN). – Omalos [18], cave, 12 July 1995 net 1ma. – **Published data.** Ahaia. Kastria [1], cave, 11 ind. and 29 ind. (Ihopoulou-Georgudaki 1977), Limnae Kastriae, Mt. Helmos (Ihopoulou Georgudaki & Ondrias 1978). Limnos, cave, 9m, 12f (Ihopoulou Georgudaki 1986). – Attiki - Pireas. Nymphis Kouvara [= Kouvaras] [19], cave, 27 Jan. 1954 1 skull [MHNG 975.077] (Strinati 1955). – Evros. cave Bouba Lefkimis (n. Lefkimmi) [20], 3 July 1997 obs. nurs. colony of ca. 200 ind. (Ivanova 2000). – Didymotichon [= Didimotiho] [6], cave 3 km WNW, 22 June 1963 (Hurka 1972), Didymotichon, resp. Didimotichon, cave 3 August 1971 ca. 2000 ind. (Niethammer 1974, Kock 1974). – Kouvobono [= Koufovouno] [7], 8.9 June 1965 (Hurka 1972), cave Coufovouno 23 July 1997 obs. nurs. colony of ca. 3000–3500 ind. (Ivanova 2000). – gallery Tsoutsourou II (n. Dadia) [5], 22 July 1997 obs. nurs. colony of ca. 50 ind. (Ivanova 2000). Imathia. Naoussa [21], grotte de l'Apano Scala resp. Scala, 24 May 1954 [1f (MHNG 1711.079 [A])] (Lindberg 1955, Aellen 1955). – Kastoria. Trou de Patarangou resp. de Patarangon, cave [22], 28 May 1954 [4f (MHNG 1713.097–100 [A])] (Lindberg 1955, Aellen 1955), 4m, 1f (Ihopoulou Georgudaki 1986). Korintia. Corinth [= Korinthos] [23], 3m, 3f, 11 ind. (Miller 1912). – Kozani. Limakia [24], cave, 19 ind. (Ihopoulou-Georgudaki 1977, Ihopoulou Georgudaki & Ondrias 1978). – Rodopi. Maroina [11], cave of Cyclops, 26 July 1997 obs. colony of ca. 1500 ind. (Ivanova 2000). Serres. Saint-Jean le-Prodrome [= Agios Ioannis Prodromos] [12], grotte Pelade, 6 May 1954 [2m, 2f (MHNG 1714.003–006 [A])] (Lindberg 1955, Aellen 1955), cave Prodromou Serron, resp. Ioannis Prodromos, 4m, 1f (Ihopoulou-Georgudaki 1977, Iopoulou-Georgudaki & Ondrias 1978). – Thessaloniki. Rentina [= Rendina] [13], cave, 24 April 1955 1f [MHNG 967.075 A] (Strinati 1959). – Thrazien (no exact loc.), 23 April 19?? (Kock 1974). Aegean Is. Kos [25], sea cave 22 March 1966 (Martens 1967). – Lesvos. Mithymna [= Mithimna] [26], 55m, 91f (Ihopoulou-Georgudaki 1977, 1986, Ihopoulou-Georgudaki & Ondrias 1978). Rhodos [= Rodos]. Lindos, 27 April 1964 [27] (Pieper 1965, 1966). – Skiathos, Kastro [28], 29 March 1959 – ind. (Kock 1974). – Crete. Hagiia Dekka [= Agiot Deka] [17], Labyrinth, 2 ind. resp. 1m (Bate 1905, Miller 1912), Labyrinth, 11 June 1925 1 ind. (Pohle 1953). – Chania [= Hania] [29], before 1886 1 ind. (Kock 1974). – Limnes [30] (Theodor 1967). – Sarchos [= Sarhos] [31], 1 ind. (from owl pellets) (Pieper 1977). – Topolia [32], 10 ind. (from owl pellets) (Pieper 1977). – Kreta (no exact loc.), 2 ind. (Pohle 1953). Ionian Is. Korfu [= Kerkira], Ag. Matheos [= Agia Matheos] [33], 1 ind. (from owl pellets) (Niethammer 1962). Zakinthos [34], Zygoti cave, 1 ind. (Ihopoulou Georgudaki 1977).

DISTRIBUTIONAL STATUS (Fig. 21). Like all over the Balkans, this species is widespread over the territory of Greece incl. Crete and a number of islands, thus being among the most common bat species. As a typical cavernicolous species, it is confined to karstic areas from the sea level up to high mountain altitudes (up to 1100 m in the Pindus Mts.). Like elsewhere in the Balkans, it forms large colonies in spacious caves (Didimotiho, 3 August 1971, ca. 2000 ind.), data are also available on hibernation of this species in Greece (March, Thrace). External and cranial dimensions of examined specimens of *M. schreibersii* from Greece are shown in Tab. 5.

TAXONOMIC NOTE. The Balkan populations of *M. schreibersii*, including the Greek ones, has been occasionally included in the subspecies *M. schreibersii inexpectatus* Heinrich, 1936 (terra typica: Strandja Mts., SE Bulgaria). However, that name has been considered, almost without any exceptions, to be a junior synonym of the nominotypical form (Ellerman & Morrison-Scott 1951, Corbet 1978, Koopman 1994, Rodrigues in Mitchell-Jones et al. 1999, etc.).

Tadarida teniotis (Rafinesque, 1814)

RECORDS. **Original data.** Attiki - Pireas. Athina, Likavitos hill [1], 9 Oct. 2000 det. 1 ind. – Evros. Kirki [2], river 6 km E, 21 July 2000 det. 1 ind. Fokida. Delfi [3], 22 Sept. 1988 det. 1 ind. – Halkidiki. Petralona [4], rocky ridge, 27 Sept. 1988 det. 1 ind. – Ioannina. Ioannina, Limni Pamvotis lake [5], NW bank, 13 Oct. 2000 det. 1 ind. – Messinia. Trahila [6], sea shore, 13 Sept. 1996 det. 1 ind. – Lakonia. Itilo [7], garden, 14 Sept. 1996 det. imm. 1 ind. – Thessaloniki. Thessaloniki [8], university, 3 July 1981 1m. – Trikala. Meteora [9], 3 August 1694 2fa (WIC 1404, 1405), 24 August 1964 4fa (WIC 1412–1415), 23 Sept. 1988 det. 10 ind. – Xanthi. Galani [10], cave, 26 June 1989 and 15 Sept. 1990 obs. Aegean Is. Lesvos. Agia Marina [11], mountain ridge, 11 Sept. 2000 det. several ind., Lesvos. Efthalou [12], area 4 km E, 14 Sept. 2000 det. several ind. – Thira, Perissa [13], 10–11 Oct. 2000 det. min. 1 ind. – Crete. Agia Roumeli

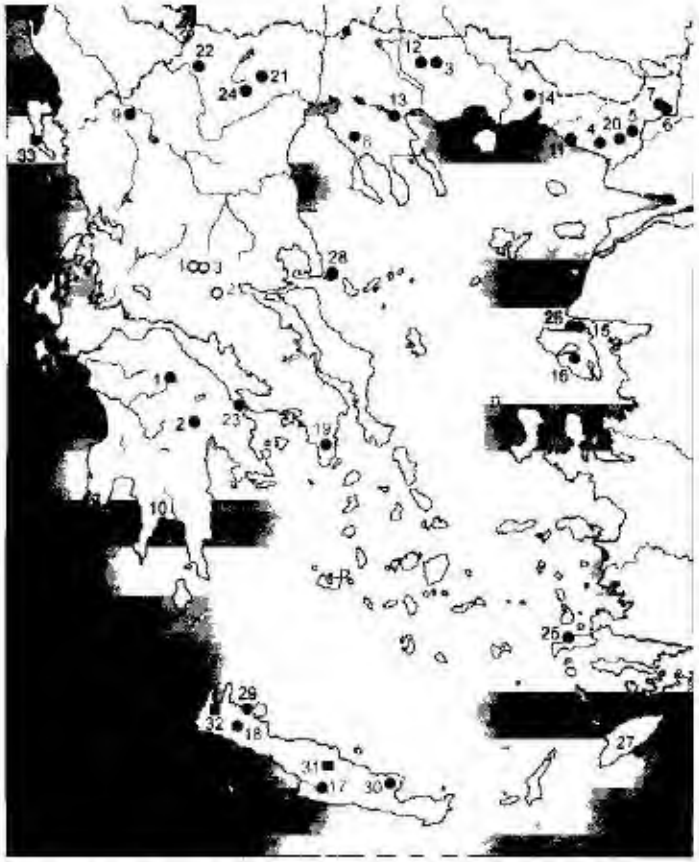

Fig. 21. Records of *Miniopterus schreibersii* (Kuhl, 1817) (closed symbols) and *Barbastella barbastellus* (Schreber, 1774) open symbols) in Greece, for symbol explanations see Fig. 2

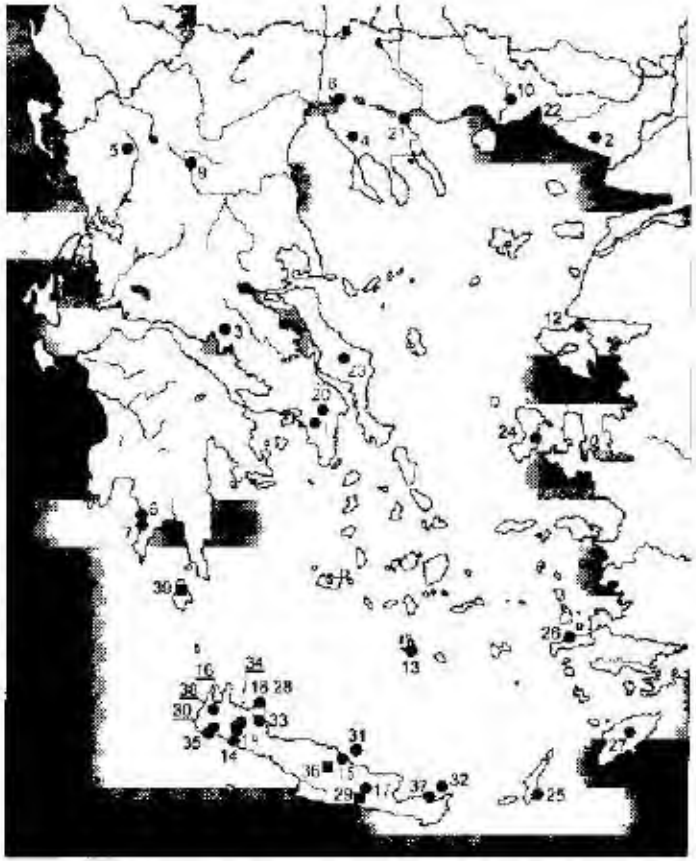

Fig. 22. Records of *Tadarida teniotis* (Rafinesque, 1814) in Greece, for symbol explanations see Fig. 2

[14], a rocky cliff, 14 July 1995 det 1 ind.; – Amoudara [15], cave, 8 July 1995 and 10 July 1995: det 1 ind., rocky canyon, 7 July 1995 det 1 ind., – Omalós [16], above the valley, 12 July 1995 det 1 ind.; – Psihro [17], village, 19 July 1995 det 1 ind., – Stavrós (Akrotiri pen.) [18], 10 July 1995 det. 1 ind., – Xylóskalo n Omalos [19], a small cave, 13 July 1995 det 1 ind. – **Published data** Attiki - Pireás Athen [= Athina], Lykabettos [= Likavitos] [1], 15 and 17 April 1965 obs (Martens 1967), Likavitos, 1m (Hiopoulou-Georgudaki 1972), – *Dekaïon* [= Dekeleia] *[20], 4f (as Nyctinomus cestonii) (Winge 1881)* – Trikala Meteora [9], 3 August 1964, 24 August 1971 5fa (Kock & Nader 1984) – Thessaloniki, Stavrós [21], 13 March 1963 1m, 1f (Pieper 1965, Kock 1969, Kock & Nader 1984) – Xanthi Porto Lagos [= Lágos] [22], Febr – early March 1987 1 ind (from owl pellets) (Altvizatos & Gouther 1999). – Aegean Is: Eboea [= Evia] [23] (as *Dysopes cestonii*, Lindermayer 1855, Kolenati 1859), – Chios [= Hios] [24], obs (Kock 1974a), – Karpathos, Pigadhia (Karpathos) [25], 9 April 1963 (Pieper 1965), Kárpathos, obs (Martens 1967); – Kos [26], (Pieper 1966), – Sporaden [= Ns. Sporades] (no exact loc.), 16 June 1958 (Kahmann 1959), Rhodos [= Rodos] [27] (Pieper 1966) – Crete, Katholiko [28], monastery ruins, Akrotiri pen., 13 March 1965 obs (Martens 1967), Ano Viannos [= Ano Vianos] [29], 2 ind (from owl pellets) (Pieper 1977), – Azogyres bei Palaochora [= Azogires n. Paleohora] [30], 19 March 1965 obs (Martens 1967), – Dia I [31] (Kahmann 1959), – Dragonado I [32] (Kahmann 1959), – Kalives [33], E of Chania [= Hanià], 22 March 1965 obs (Martens 1967), – Lakki [34], Weiße Berge [= Lefka Óri], 6 April 1965 obs (Martens 1967), – Palaochora [= Paleohóra] [35], 21 March 1965 obs (Martens 1967), – Sanchos [= Sárhos] [36], 1 ind (from owl pellets) (Pieper 1977), – Sitia, Kap Sitia [37], rocky crevice, 22 March 1958 1 ind (Kahmann 1959), 23 March 1965 obs (Martens 1967), Sitia, 1 ind (Kock 1969), – Topolia [38], 17 March 1965 obs (Martens 1967), Topolia, 1 ind. (from owl pellets) (Pieper 1977) Ionian Is: Kithira, n Potamós [39], May 1970 1 ind (from owl pellets) (Niethammer 1971) – Macedonia (no exact loc.), obs (Martens 1967) – Peloponnese, E coast, obs. (Martens 1967) – Greece (no exact loc.), 1fa (Dobson 1878, Miller 1912)

DISTRIBUTIONAL STATUS (Fig. 22). As shown by the Greek records registered here, this typical Mediterranean species is probably distributed almost all over mainland Greece as well as on Crete and at least seven Aegean islands. The northern limit of its Balkan range passes fringes the north of the Greek territory through southern Bulgaria (Kalčev & Beškov 1963, Pandurska 1992, Obuch & Benda 1996, own data), the Rep. of Macedonia (Kryštufek et al. 1992, 1998) and Albania (Lamani 1970, Uhrin et al. 1996). Northernmost part of distributional area of *T. teniotis* in the Balkans lies in central Dalmatia (for a review see Červený & Kryštufek 1988, comp. Mitchell-Jones et al. 1999)

CONCLUSIONS

In the present review, we have summarised the occurrence of a total of 32 bat species from the *whole territory of Greece (Tab. 7). For each species, a complete list of published records in Greece* is given and new, original ones are added for 29 of them. The species *Pipistrellus pygmaeus* (= *P. mediterraneus*) is reported here from the territory of Greece for the first time. In agreement with a number of earlier authors, we have excluded *Nyctalus thebaica* from the list of the bats of Greece (see Comments on *N. thebaica*).

Considering the relatively small territory of Greece, the unexpectedly large diversity of bats was here recorded. This suggest as well that this region ranks among the important zoogeographic crossroads as that this is the region with considerably large geographic and environmental diversity. Bat fauna of Greece includes as well the boreal species, widespread over the western Palaearctic meet as those just characteristic of the southern Mediterranean part of Europe. The territory of Greece show greater species richness (among others, of the bat fauna) than other European regions of comparable size. Moreover, our contribution has acknowledged recent partial taxonomic revisions that have enriched the classical conception of the European bat fauna, as presented e. g., by Mitchell-Jones et al. (1999). This is true for five taxa to which the species status and also occurrence in Europe has recently been ascribed (viz., *Myotis aurascens*, *M. alcathoe*, *M.* cf. *punicus*, *Pipistrellus pygmaeus/mediterraneus*, *Plecotus kolombatovici*). Above all, it is this latter fact which has markedly increased the presumed species spectrum of Greek bats but, at the same time, it is

Tab. 7. Number of bat records in general units of Greece. NG – Northern Greece (Macedonia and Thrace), CG – Central Greece (Epirus, Thessaly and Sterea Ellada), PE – Peloponnese, II – Ionian Islands, NA – Northern Aegean Islands (incl. Euboea and Chios Isls.), SA – Southern Aegean Islands (Cyclades, Dodecannese, Samos, and Ikaria), CR – Crete.

species \ region	NG	CG	PE	II	NA	SA	CR	Σ
Rhinolophus ferrumequinum	18	14	5	2	8	5	20	72
Rhinolophus hipposideros	8	12	8	2	2	1	16	49
Rhinolophus euryale	8	3	3	2	1	–	–	17
Rhinolophus mehelyi	5	2	1	–	1	–	–	12
Rhinolophus blasii	6	4	3	2	4	4	9	32
Myotis myotis	14	6	5	2	3	1	–	31
Myotis blythii	16	8	6	2	6	2	13	53
Myotis bechsteinii	4	3	1	–	–	–	–	8
Myotis nattereri	5	1	4	1	–	–	–	11
Myotis emarginatus	11	5	1	(1)	–	2	5	24
Myotis mystacinus s. str.	1	–	–	–	–	–	–	1
Myotis aurascens	16	–	3	–	–	–	1	20
Myotis alcathoe	2	2	–	–	–	–	–	4
Myotis daubentonii	7	–	–	–	–	–	–	7
Myotis capaccinii	16	2	4	1	2	1	1	27
Vespertilio murinus	6	–	–	–	1	–	–	7
Eptesicus serotinus	10	6	1	1	5	1	4	28
Eptesicus (bottae) anatolicus	–	–	–	–	–	7	–	7
Hypsugo savii	11	8	8	–	5	4	10	46
Pipistrellus pipistrellus s. str.	4	2	–	–	–	–	–	6
Pipistrellus pygmaeus / mediterraneus	3	3	5	–	3	1	–	15
Pipistrellus nathusii	21	2	1	–	1	–	–	25
Pipistrellus kuhlii	11	6	12	7	2	3	11	52
Nyctalus noctula	6	1	1	–	2	–	–	10
Nyctalus leisleri	17	9	1	–	–	1	–	28
Nyctalus lasiopterus	6	4	–	–	–	–	–	10
Barbastella barbastellus	–	3	–	–	–	–	–	3
Plecotus auritus	4	1(3)	1	–	–	(1)	–	6(9)
Plecotus austriacus	5	2	–	–	–	–	–	7
Plecotus kolombatovici	–	4	(1)	(1)	(1)	(1)	1(3)	5(11)
Miniopterus schreibersii	15	2	4	2	4	3	6	36
Tadarida teniotis	7	5	3	1	4	4	17	41
total (no. records)	266	121	81	25	54	40	114	701
total (no. species)	29	27	22	12	17	15	13	32
records per species	9.2	4.5	3.7	2.1	3.2	2.4	8.8	21.9

most unfortunate that it does not permit – at least for the time being – a more general comparison with the situation in other regions of south-eastern Europe where the new species may also be expected to occur but have not yet been mentioned in the literature. Even so, the bat fauna inhabiting the southernmost tip of the Balkan Peninsula shows a rather dominant European composition, almost without the presence of forms that penetrate the eastern Mediterranean from the Middle East (cf. Benda & Horáček 1998, Harrison & Bates 1991) or from the Northern Africa (comp. Hanak & Elgadi 1984, Qumsiyeh 1985, Qumsiyeh & Schlitter 1982). Exceptions are provided by *Myotis blythii omari* which has colonized Crete, and *Eptesicus (bottae) anatolicus* inhabiting Rhodes Island. The latter species has only been included in the Greek fauna because this Asia Minor island belongs to Greece, while the species does not exceed in any way the limits of its Asian range. *M. b. omari* on Crete and *E. (b.) anatolicus* on Rhodes attain the westernmost limits of their respective ranges.

In contrast to previous reviews of the bat fauna of Greece (Laar & Daan 1964, Ondrias 1965 Iliopoulou-Georgudaki 1977), the present one substantially contribute to better define the southern limits of the ranges of several European "boreal" species in the Balkans. This concerns especially *Myotis bechsteinii*, *M. daubentonii*, *M. nattereri*, *Vespertilio murinus*, *Pipistrellus nathusii*, *Nyctalus noctula*, *N. leisleri*, and *Barbastella barbastellus*. While the ranges of *M. bechsteinii*, *M. nattereri*, and *B. barbastellus* apparently reach the southernmost regions of mainland Greece, thus cannot be definitely stated as regards the other species mentioned (above all, *M. daubentonii*, *V. murinus*, and *P. nathusii*). The summer occurrence of *P. nathusii*, *N. noctula* and *N. leisleri* pertains mostly to the northern and/or montaneous regions of Greece and, since all these three species perform long-range migrations (see e. g. Strelkov 1969, 1997a, b), records in the more southern regions of Greece may represent seasonal visits only. According to current observations, the southern limit of the range of *M. daubentonii* reaches only the north of Greece where lives in sympatric occurrence with *M. capaccinii*, a species of similar ecology. In that region, a distribution limit similar to that of *M. daubentonii* may also be true for *Myotis brandtii*, a species which has not yet been documented in the territory of Greece. The records of this species in the Bulgarian Rhodopes Mts. close to the Greek border (Horáček et al. 1974) suggest the possible occurrence of this species in Greece. Another species showing a similar distribution over Europe and which is also present in southern Bulgaria, is *Eptesicus nilssonii* (Keyserling et Blasius, 1839). This is thus another candidate for possible addition to the list of Greek bat fauna (see Hanák & Horáček 1986). As regards other bat species, our review has only completed the published data by a number of new records, without altering the known picture of their distribution in that region.

As mentioned above, the present contribution reports the occurrence of forms whose species status has only recently been recognised (Barratt et al. 1997, Benda & Tsytsulina 2000, Helversen et al. 2001, Spitzenberger et al. 2001) and thus implement the respective taxonomic results into actual distributional and zoogeographical contexts.

The situation recently arising with the forms of *M. mystacinus* group is particularly complicated in the region of the southern Balkans. While, until now, only *M. mystacinus* (s. l.) was reported to occur in that region (presence of *M. brandtii* being expected in the northern regions of Greece, not proved, of course), at present, the newly recognised species, *M. aurascens* (see Benda & Tsytsulina 2000) is considered to be the dominant form of that species group. Besides of *M. aurascens*, two other species were proved to occur in Greece: the newly described *M. alcathoe* and the central European *M. mystacinus* s. str. It is difficult to separate the latter two species with morphologic characters due to the scarce available material from the Balkans. Hence it is not easy to precisely define the ranges of these two species in the whole of south-eastern Europe. The situation of the *Pipistrellus pipistrellus* species complex appears to be more clear, though the newly defined species are still not clearly recognisable with aid of morphological characters. In the classical ("single-species") concept, *P. pipistrellus* was among the most common bat species in Greece. Our observations show that both species, *P. pipistrellus* s. str. and *P. pygmaeus/nedterraneus*, occur in the territory of Greece, and the later species seems more abundant. However, it will be necessary to precise their distribution, biology and ecological requirements both in Greece and the whole Palaearctic. Already in the past there had been a problem associated with the distribution of the two classical species of the genus *Plecotus* (viz., *auritus* and *austriacus*, see e.g. Pieper 1977). At present, with the specific status being suggested for a third form, *P. kolombatovici*, it is necessary to check, uncertain records of *P. auritus* from the south of Greece and to admit the occurrence of a third species in that region. The results presented above show that all three species mentioned do occur in that territory even if the taxonomic value of a number of the records is unclear for the time being.

In this contribution we have presented the hitherto known picture of all bat species known t occur in the territory of Greece. However, this is only a partial stage of research into the fauna c Greece, it will be necessary to precise the ranges of most bat species by subsequent investiga tions. As regards that territory, the knowledge of its bat fauna is just mosaic. Above all, the ba fauna of most islands as well as several regions of mainland Greece is known only on the basis c occasional records and, beyond doubt, the systematic investigations will change the present viev considerably. Increased knowledge of the distribution of bats over the Balkans will also increas the possibility for a real comprehension to some of the taxonomic and biogeographic problems o the Palaearctic bat fauna (see Horáček et al. 2000).

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APPENDIX 1 – GAZETTEER

Original record localities mentioned in the text (see Fig 23) **1** Didimotiho [Διδυμοτειχο] (Evros) (41° 21' N, 26° 29' E) – **2** Koufovouno [Κουφοβουνο] (Evros) (41° 22' N, 26° 26' E) – **3** Dadia [Δαδια], Tsoukourou galleries (Evros) (41° 08' N, 26° 13' E) – **4** Kirki [Κιρκη], river 6 km E (Evros) (40° 58' N, 25° 50' E) – **5** Avas [Αβας], road 2 km S (Evros) (40° 55' N, 25° 55' E) – **6** Alexandroupoli [Αλεξανδρουπολη] (Evros) (40° 51' N, 25° 52' E) – **7** Makri [Μακρη] (Evros) (40° 51' N 25° 14' E) – **8** Maronia [Μαρωνεια], Cave of the Cyclops Polyphemos (Rodopi) (39° 54' N, 25° 33' E), creek 2 km SW (Rodopi) (39° 54' N, 25° 32' E) – **9** Kimmeria [Κιμμερια] (Xanthi) (41° 09' N, 24° 56' E) – **10** Xanthi [Ξανθη] road 8 km N (Xanthi) (41° 11' N, 24° 51' E) – **11** Galani [Γαλιανη] (Xanthi) (41° 06' N, 24° 46' E) – **12** Mikropoli [Μικροπολι] (Drama) (41° 12' N, 23° 48' E) – **13** Agios Ioannis Prodromos [Αγιος Ιωαννης Προδρομος] (Sérres) (41° 08' N, 23° 37' E) – **14** Stavros [Σταυρος] (Thessaloniki) (40° 40' N, 23° 42' E) – **15** Rendina [Ρεντινα], creek 2 km E (Thessaloniki) (40° 40' N 23° 38' E) – **16** Agios Prodromos [Αγιος Προδρομος] (Halkidiki) (40° 28' N, 23° 23' E) – **17** Ormilia [Ορμυλια] (Halkidiki) (40° 17' N, 23° 33' E) – **18** Metamorfossi [Μεταμορφωση], river 5 km W (Halkidiki) (40° 15' N, 23° 33' E) – **19** Petrálona [Πετραλωνα] (Halkidiki) (40° 22' N, 23° 09' E) – **20** Eleohoria [Ελαιοχωρια] (Halkidiki) (40° 20' N, 23° 10' E) – **21** Loutra Thermis [Λουτρα Θερμης] (Thessaloniki) (40° 31' N, 23° 04' E) – **22** Thessaloniki [Θεσσαλονικη] (Thessaloniki) (40° 38' N, 22° 58' E) – **23** Milos [Μυλος], 1 km E (Kilkis) (40° 54' N, 22° 53' E) – **24** Naoussa [Ναουσα], Apano Scala cave (Imathia) (40° 38' N, 22° 04' E) – **25** Ermakia [Ερμακια], 1 km W (Kozani) (40° 30' N, 21° 51' E) – **26** Papagiannis [Παπάγιαννης] (Florina) (40° 51' N, 21° 29' E) – **27** Pili [Πυλη], 3 km E (40° 47' N, 21° 04' E) and Spilia Zahariadi cave [Σπηλια Ζαχαριαδη] (40° 47' N, 21° 02' E) (Florina) – **28** Vatohori [Βατοχωρι], 2 km E (Florina) (40° 41' N, 21° 10' E) – **29** Krya Nera [Κρυα Νερα] (Kastoria) (40° 25' N, 21° 11' E) – **30** Papigo [Παπιγκο] (Ioannina) (39° 58' N, 20° 43' E) and Drakolimni lake [Δρακολιμνη] (Ioannina) (39° 59' N, 20° 47' E) – **31** Kleidonia [Κλειδωνια] (Ioannina) (39° 58' N, 20° 40' E) – **32** Aidonohori [Αιδονοχωρι] (Ioannina) (40° 04' N, 20° 35' E) – **33** Asprokklisi [Ασπροκκλησι] (Thesprotia) (39° 37' N, 20° 14' E) – **34** Paralia Drepano [Παραλια Δρεπανο] (Thesprotia) (39° 31' N, 20°12' E) – **35** Mesopotamo [Μεσοποταμο] (Preveza) (39° 15' N, 20° 33' E) – **36** Despotiko [Δεσποτικο] (Preveza) (39° 13' N, 20° 40' E) – **37** Ioannina, Limni Pamvotis lake [Ιωαννινα, Λιμνη Παμβοτις] (Ioannina) (39° 41' N, 20° 21' E) – **38** Meteora [Μετεωρα] (Trikala) (39° 43' N, 21° 38' E) – **39** Dimitra [Δημητρα], 3 km E (Grevena) (39° 57' N, 21° 41' E) – **40** Prionia [Πριονια] (Pieria) (40° 05' N, 22° 24' E) – **41** Agios Dionessios monastery [Μονη Αγιος Διονυσιος] (Pieria) (40° 06' N, 22° 26' E) – **42** Paralia Skotinas [Παραλια Σκοτινας] (Pieria) (40° 2' N, 22° 35' E) – **43** Agios Dimitrios monastery [Μονη Αγιος Δημητριος] (Larissa) (39° 52' N, 22° 44' E) – **44** Anthiro [Ανθιρο], Tavropos river (Karditsa) (39° 12' N, 21° 45' E) – **45** Kombotades [Κομποτάδες] (Fthiotida) (38° 52' N, 22° 21' E) – **46** Amfissa [Αμφισσα] (Fokida) (38° 32' N, 22° 23' E) – **47** Delfi [Δελφοι] (Fokida) (38° 29' N, 22° 30' E) – **48** Arahova [Αραχοβα], Coryctan cave (Viotia) (38° 29' N, 22° 35' E) – **49** Livadha [Λειβαδεια] (Viotia) (38° 26' N, 22° 53' E) – **50** Athina, Likavitos hill [Αθηνα, Λυκαβηττος] (Attiki-Pireas) (37° 59' N, 23° 45' E) – **51** Daskalio [Δασκαλιο] (Attiki-Pireas) (37° 49' N, 24° 05' E) – **52** Arhea Korinthos [Αρχαια Κορινθος] (Korinthia) (37° 53' N, 22° 52' E) – **53** Antikion [Αντικριον] (Korinthia) (38° 03' N, 22° 35' E) – **54** Kastria [Καστρια], Lumion cave (Ahaia) (37° 57' N, 22° 08' E) – **55** Viziki [Βυζικι], 1 km S (Arkadia) (37° 43' N, 21° 57' E) – **56** Spatharis [Σπαθαρης], 4 km S (Arkadia) (37° 43' N, 21° 53' E) – **57** Simopoulo [Σιμοπουλο], 2 km W (Ilia) (37° 51' N, 21° 32' E) – **58** Nea Ilis [Νεα Ηλις], Pinios river 2 km N (Ilia) (37° 54' N, 21° 23' E) – **59** Kastro [Καστρο] (Ilia) (37° 53' N, 21° 08' E) – **60** Arhea Olympia [Αρχαια Ολυμπια] (Ilia) (37° 38' N, 21° 38' E) – **61** Perivolia [Περιβολια] (Ilia) (37° 25' N, 21° 51' E) – **62** Kantena [Καρτσενα] (Arkadia) (37° 29' N, 22° 02' E) – **63** Artiki [Αρτικι], 1 km N (Messinia) (37° 16' N, 21° 47' E) – **64** Petrohori, Palecokastro [Πετροχωρι, Παλαιοκαστρο] (Messinia) (36° 58' N, 21° 39' E) – **65** Tzanes [Τζανες], 2 km NE (Messinia) (36° 59' N, 21° 56' E) – **66** Neo Proastio [Νεο Προαστιο] (Messinia) (36° 52' N, 22° 15' E) – **67** Stoupa, Kardamili [Στουπα Καρδαμυλη] (Messinia) (36° 51' N, 22° 16' E) – **68** Trahila

[Τραχηλα] (Messinia) (36° 47' N, 22° 19' E) – **69** Iulo [Οιτυλό] (Lakonia) (36° 42' N, 22° 23' E) – **70** Gythe [Γυθειο] (Lakonia) (36° 46' N, 22° 34' E) – **71** Mistras [Μυστρας] (Lakonia) (37° 05' N, 22° 22' E) – **72** Sparti [Σπαρτη] (Lakonia) (37° 05' N, 22° 26' E) – **73** Poliroso [Πολυδροσο], 2 km S (Lakonia) (37° 09' N, 22° 37' E) – **74** Fleohori [Ελαιοχωρι], 3 km S (Arkadia) (37° 26' N, 22° 35' E) – **75** Kefalovrisso [Κεφαλοβρυσο] (Argolida) (37° 42' N, 22° 28' E)

Aegean Is. – **76** Thassos, Thassos (Hora) [Θασος Χωρα] (Kavala) (40° 46' N, 24° 43' E) – **77** Thassos, Panagia [Θασος, Παναγια] (Kavala) (40° 44' N, 24° 44' E) and Skala Potamia [Σκαλα Ποταμια] (40° 43' N, 24° 46' E) – **78** Thassos, Archangelou monastery [Θασος, Μονι Αρχαγγελου] (Kavala) (40° 36' N, 24° 44' E) – **79** Thassos, Theologos [Θασος, Θεολογος] (Kavala) (40° 39' N, 24° 42' E) – **80** Samothraki, Paleópoli [Σαμοθρακη Παλαιοποαι] (Evros) (40° 41' N, 25° 32' E) – **81** Samothraki, Therma [Σαμοθρακη, Θερμα] (Evros) (40° 40' N, 25° 36' E) – **82** Samothraki, Samothraki (Hora) [Σαμοθρακη, Χωρα] (Evros) (40° 39' N, 25° 31' E) – **83** Samothraki, Lakkoma [Σαμοθρακη Λακκωμα] (Evros) (40° 36' N, 25° 31' E) – **84** Skiathos, Kupriso [Σκιαθος Κεφρισο] (Magnessia) (39° 10' N, 23° 59' E) – **85** Lesvos, Skoutaros [Λεσβος, Σκουταρος], 4 km S (Nissia Egeon)

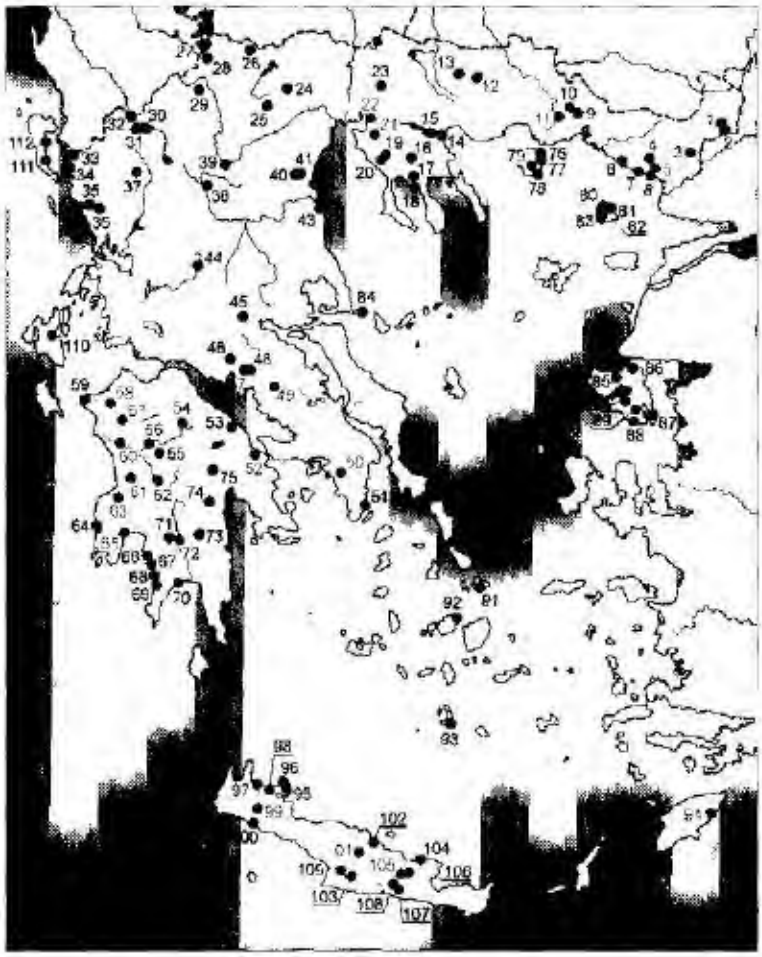

Fig. 33. Original record localities mentioned in the text, for locality numbers see gazetteer in Appendix I.

(39° 16' N, 26° 07' E) – **86** Lesvos, Efthalou [Λεσβος, Ευθαλου], 4 km E (Nissia Egeou) (39° 23' N, 26° 14' E) – **87** Lesvos, Agia Marina [Λεσβος, Αγια Μαρινα], Agios Bartholomeos cave (Nissia Egeou) (39° 03' N, 26° 33' E) – **88** Lesvos, Agios Isidoros [Λεσβος, Αγιος Ισιδωρος] (Nissia Egeou) (38° 58' N, 26° 24' E) – **89** Lesvos, Mihos [Λεσβος, Μιχος] (Nissia Egeou) (39° 05' N, 26° 25' E) – **90** Lesvos, Vassilika [Λεσβος, Βασιλικα], 5.5 km E (Nissia Egeou) (39° 06' N, 26° 17' E) – **91** Mikonos, Kalamopodi [Μυκονος, Καλαμοποδι] (Kiklades) (37° 25' N, 25° 21' E) – **92** Paros, Naousa [Πορος, Ναουσα] (Kiklades) (37° 07' N, 25° 14' E) – **93** Thira (Santorini), Perissa [Θηρα, Περισσα] (Kiklades) (36° 22' N, 25° 28' E) – **94** Rodos, Afandou [Rodos, Afantou] (Dodekanissa) (36° 17' N, 28° 11' E)

Crete **95** Agia Triada monastery [Μονη Αγια Τριαδα] (Hania) (35° 34' N, 24° 08' E) – **96** Stavros [Σταυρος] and Katholiko monastery [Μονη Καθολικου] (Hania) (35° 35' N, 24° 05' E) – **97** Gerani [Γερανι] (Hania) (35° 31' N, 23° 52' E) – **98** Hania [Χανια] (Hania) (35° 31' N, 24° 0' E) – **99** Omalos [Ομαλος] (Hania) (35° 21' N, 23° 54' E) and Xyloskalo [Ξυλοσκαλο] (Hania) (35° 18' N, 23° 55' E) – **100** Agia Roumeli [Αγια Ρουμελη] (Hania) (35° 15' N, 23° 57' E) – **101** Sarhos [Σαρχος] (Irakhio) (35° 14' N, 25° 00' E) – **102** Amoudara [Αμμουδαρα] (Irakhio) (35° 20' N, 25° 04' E) – **103** Gortis [Γορτις] (Irakhio) (35° 04' N, 24° 57' E) – **104** Milatos [Μιλατος] (35° 18' N, 25° 34' E) and Paralia [Παραλια] (Lassithi) (35° 19' N, 25° 34' E) – **105** Psihro [Ψυχρο] (Lassithi) (35° 10' N, 25° 27' E) – **106** Tzermiado [Τζερμιαδο] (Lassithi) (35° 12' N, 25° 29' E) – **107** Ano Viannos [Ανω Βιαννος] (Irakhio) (35° 03' N, 25° 25' E) – **108** Katofigi [Κατεφυγι] (Irakhio) (35° 05' N, 25° 24' 04' E) – **109** Mires [Μαιρες] (Irakhio) (35° 04' N, 24° 53' E)

Ionian Is. **110** Kefalonia, Karavomilos [Κεφαλλονια, Καραβομυλος], Fitidi cave (Kefalonia) (38° 16' N, 20° 37' E) – **111** Kerkira, Messongi [Κερκυρα, Μεσογγη] (Kerkira) (39° 29' N, 19° 56' E) – **112** Kerkira, Potamos [Κερκυρα, Ποταμος] (Kerkira) (39° 37' N, 19° 53' E)

APPENDIX II – LIST OF COMPARATIVE MATERIAL

Plecotus auritus (Linnaeus, 1758)

Czech Rep. Bechyně (Tabor Dist.), 18 March 1965 1f (NMP 49116), – Chlum (Benešov Dist.), 31 Jan. 1955 1f (IVB 07), – Dobra (Frydek-Mistek Dist.), 27 August 1954 2f (IVB 11, 12), – Josefov, Býčí skála cave (Blansko Dist.), 17 March 1962 1m (IVB 13), Karlštejn (Beroun Dist.), 12 March 1955 1m (IVB 5), – Lažanky, Kateřinska jeskyně (Blansko Dist.), 4 March 1963 1f (IVB 20), Lesnice (Šumperk Dist.), 2 July 1964 1f (IVB 24), – Loreta (Klatovy Dist.), 31 Dec. 1984 1m (NMP 39149), – Mala Moravka (Bruntal Dist.), 14 Jan. 1971 1 s.t., 1m (MUB 1 2 81, 1 1 82), 24 Febr. 1973 1f (MUB 1 2 12), 9 Febr. 1974 1f (MUB 1 2 48), Nakří (Ceske Budějovice Dist.), 9 Sept. 1955 1m (IVB 10), Olšovec (Přerov Dist.), 9 Febr. 1961 1m (IVB 6), – Ostrov u Macochy (Blansko Dist.), 9 Jan. 1968 1m (IVB 27), – Pohorelice (Břeclav Dist), 22 August 1958 1f (IVB 4), – Polna (Jihlava Dist.), 18 June 1963 1f (IVB 28), Praha-Lhotka (sídliště Novodvorska) (Praha Dist.), 17 June 1988 1f (NMP 50099), – Studenec (Třebič Dist.), 6 Sept. 1966 1m (IVB 26), – Tišnov, Květnice (Brno venkov Dist.), 11 Nov. 1950 1f (MUB 1 1 23), – Tišnov, Předklašteří (Brno-venkov Dist.), 5 July 1963 1f (IVB 21), 19 June 1963 1f (IVB 29), – Zvikovske Podhradi, Zvikov (Pisek Dist.), 24 April 1960 (NMP 49094), 16 Jan. 1963 1f (NMP 49093)

Slovakia Dobšinska Ladova Jaskyňa (Rožňava Dist.), 3 March 1963 1m 1f (IVB 17, 19), – Jelenec, hrad Gymeš (Nitra Dist.), 1 July 1966 1m (MUB 1 1 34), Zverovka (Tvrdošin Dist.), 12 August 1963 1f (IVB 22)

Bulgaria Gela (Smoljan Dist.), Ledenica cave, 13 August 1978 4m, 2f (NMP 49072, 49077), – Jagodina (Smoljan Dist.), Dolna Karevska dupka cave, 16 August 1978 1m (NMP 49078), – Orehovo (Smoljan Dist.), 25 August 1980 1m (NMP 49082)

Plecotus austriacus (Fischer, 1829)

Czech Rep. Bechyně (Tabor Dist.), 18 March 1965 3f (NMP 49113–49115), – Běla pod Bezdězem (Mlada Boleslav Dist.), 12 Feb. 1962 1m (NMP 49100), Budišov (Třebič Dist.), 7 Sept. 1966 2m, 2f (IVB 83, 84, 86, 87), – Dolni Podluží (Děčin Dist.), 1986 1f (NMP 40140), – Hostouň (Kladno Dist.), 27 Feb. 1934 1m (NMP 39589), – Hruby Rohozec (Semily Dist.), 12 Febr. 1962 1f (NMP 49104), Klášterec nad Ohří (Chomutov Dist.), 15 Febr. 1962 2m, 3f (NMP 49105–49107, 49110–49111), – Lipnice nad Sazavou (Havlíčkův Brod Dist.), 30 Jan. 1961 1m (NMP 49095), Loket (Sokolov Dist.), 15 Febr. 1962 1f (NMP 49112), Lounin (Beroun Dist.), 21 June 1986 1m (NMP 40141), – Mikulov (soutěska, paseka) (Břeclav Dist.), 24 April 1989 1f (IVB 88), – Mnichovo Hradiště (Mlada Boleslav Dist.), 12 Febr. 1962 2m (NMP 49101, 49102), Moravsky Krumlov (Znojmo Dist.), 26 June 1964 1f (IVB 71), – Nivnice (Uherske Hradiště Dist.), 10 August 1987 1f (NMP 40630), – Němčany (Vyškov Dist), 13 March 1989 1m (NMP 50097), – Praha-Hostivař (Praha dist.), 19 Oct. 1985 1m (NMP 39374) – Rovina (Beroun Dist.), 4 Oct. 1986 1m (NMP 39843), – Slavkov u Brna (Vyškov Dist.), 9 June 1962 1f (IVB 24), Sloup (Blansko Dist.), 14 March 1965 1m (IVB 80), – Tišnov, Olsi (Brno-

venkov Dist.), 9 July 1964 1f (IVB 72). – Velehrad (Uherske Hradiště Dist.), 10 Febr 1961 1f (NMP 49096). – Lužnice, Velky Tisy (Jindřichův Hradec Dist.), 25 August 1959 1m (NMP 49117). – Zvířetice (Mladá Boleslav Dist.), 12 Febr 1962 2m, 1f (NMP 49097–49099).

Slovakia Smolenice, Driny cave (Trnava Dist.), 11 Febr 1961 1f (NMP 49103). – Krásnohorske Podhradie, Krasna Hôrka Castle (Rožňava Dist.), 4 Febr 1970 1m (MUB 1 2 51). – Važec, Važecká jaskyňa cave (Liptovský Mikuláš Dist.), 14 Febr 1961 1m (NMP 49108).

Bulgaria General Tadorov (Blagoevgrad Dist.), 4 August 1994 2m (NMP 49132, 49133), 11 August 1994 2m, 1f (NMP 49134–49136). – Gorna Breznica (Blagoevgrad Dist.), 16 July 1981 2m (NMP 49084, 49085), 20 July 1981 1m (NMP 49086). – Jagodina, Dolnokarevska dupka (Smoljan Dist.), 16 August 1978 1m (NMP 49079). – Kerlukovo (Lovеč Dist.), 3 Oct 1962 1m (IVB 42), 7 Febr 1965 2m, 3f (IVB 73, 74, NMP 49052–49054), 12 June 1977 1m (NMP 49064), 15 June 1977 1m (NMP 49065), 6 August 1978 1m (NMP 49067), 7 August 1978 2m (NMP 49068, 49071), 8 August 1978 1m (NMP 49069). – Kavarna (Tolbuhin Dist.), 11 Sept. 1962 1m, 3f (IVB 39–41). – Lakatnik (Sofija Dist.), 18 March 1956 1m (NMP 49051), 10 Febr 1965 6m, 6f (IVB 76–78, NMP 49055–49063). – Momčilgrad (Kardžali Dist.), 18 June 1977 1f (NMP 49066). – Orehovo (Smoljan Dist.), 24 August 1980 2m (NMP 49080, 49081), 25 August 1980 1m (NMP 49083), 28 June 1984 3m (NMP 49087–49089), 29 June 1984 1m (NMP 49090). – Ploski (Blagoevgrad Dist.), 30 July 1994 1m (NMP 49130), 31 July 1994 1m (NMP 49131). – Sliven (Sliven Dist.), 10 June 1982 1m (NMP 40922). – Zlatna Panega (Lovеč Dist.), 8 Febr 1965 1f (IVB 75).

Plecotus kolombatovici Đulić, 1980

Croatia, Dalmatia Hvar Is., Stari Grad, 1 Sept 1977 1m (NMP 49092). – Zavala, Bjeluša cave, Pecina cave, 29 August 1977 1m (NMP 49091).

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Studies on the genus *Rhyssemus* and related genera. I. A comparison of three closely related species from the Himalaya including a new species from Nepal (Coleoptera: Scarabaeoidea: Aphodiidae)

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Abstract. *Rhyssemus ahrensi* sp. n. from Nepal is described. It is closely related to the species *R. falcatus* Petrovitz, 1961 (Kashmir, Pakistan) and *R. helenae* Pittino, 1985 (Pakistan) due to the presence of the following combination of characters: granulate pronotal furrows, relatively large, considerably depressed areas of anterior pronotal angles, narrowed pronotum in front of posterior corners and inward bent apical calcar of male protibia. Detailed comparison of the three species, relevant drawings and scanning electron micrographs are presented.

Taxonomy, new species, Coleoptera, Scarabaeoidea, Aphodiidae, Psammodiinae, *Rhyssemus ahrensi* sp. n., Palaearctic region

INTRODUCTION

The genus *Rhyssemus* Mulsant, 1842 and related genera, i.e. genera of the tribe *Rhyssemini* having a similar sculpture of the pronotum and/or elytra (*Mesyrhus* Rakovič et Král, 1997; *Myrhessus* Balthasar, 1955; *Neorhyssemus* Gordon et Pittino, 1992, *Neotrichorhyssemus* Rakovič et Král, 1997; *Pararhyssemus* Balthasar, 1955; *Rhyssemodes* Reitter, 1893; *Rhyssemorphus* Clouët, 1900; *Trichiorhyssemus*, Clouët, 1901) currently include nearly as much as 250 species distributed in all the zoogeographical regions (Dellacasa 1987, Gordon & Pittino 1992, Rakovič & Král 1997). Their identification is frequently enormously difficult. This particularly holds for species of the genus *Rhyssemus* from Asia and the Afrotropical region. Many tens of species have been described since the time of the appearance of larger keys (Clouët 1901, Schmidt 1922, Balthasar 1964, Endrődi 1964). In addition, some of these keys offered only restricted possibilities of the identification from the very beginning. Original descriptions frequently suffer from a lack of illustrations and particularly from the fact that different authors have different attitudes to the interpretation of certain characters.

In the 1980's and 1990's, several keys to *Rhyssemus* species were published, dealing with certain selected areas, which may be quoted (with disregarding works of rather local importance) as follows: Gordon & Cartwright 1980 (Western Hemisphere), Rakovič 1983 (Australian region), Pittino 1984b (Saudi Arabia), Baraud 1985 (Northern Africa), Nikolajev 1987 (Kazakhstan and Middle Asia), Bordat et al. 1990 (Madagascar), Stebnicka & Howden 1996 (Australia), Baraud 1992 (Europe) and Hollande et al. 1998 (Northern Africa). There are also two relatively recent and very

helpful works in the literature (Pittino 1983a, 1984) including, in addition to descriptions of new species, results of studying and revising certain formerly described species.

Thus, for bridging existing gaps in knowledge of the genus *Rhyssemus* and related genera the present authors consider as useful to study certain groups of these genera with providing relevant drawings and scanning electron micrographs and to compare the species studied with adherence to a uniform manner of the interpretation of their characters.

The work presented here is aimed at a description of a new species from Nepal and comparison of this species with two formerly described, closely related species, all the three species being representatives of the Himalayan fauna.

MATERIAL AND METHODS

The following codes (after Arnett et al. 1993) identify the collections housing the material examined:
DACD – Germany, Dresden, Dirk Ahrens collection;
DKCP – Czech Republic, Praha, Charles University, David Král collection;
GDCG – Italy, Genova, Giovanni Dellacasa collection;
MHNG – Switzerland, Genève, Museum d'histoire naturelle;
MRCD – Czech Republic, Dobřichovice, Miloslav Rakovič collection.

Specimens chosen for scanning electron micrographs were cleaned by ultrasound.

Specimens of the newly described species are provided with one red printed label: Rhyssemus ahrensi ♀♂ HOLOTYPUS, ALLOTYPUS or PARATYPUS with No. xx [symbol for male or female] Miloslav Rakovič & David Král det. 2001. Exact label data are cited for the material, separate labels are indicated by double slash (//). Authors' remarks and complementations are found in square brackets.

TAXONOMIC PART

Rhyssemus falcatus Petrovitz, 1961
(Figs 1, 7–14)

Rhyssemus falcatus Petrovitz, 1961: 113; Balthasar 1964: 562, 581(monograph), Dellacasa 1988: 302, 422 (catalogue).

TYPE LOCALITY. Tasso [Kashmir] (Petrovitz 1961).

TYPE MATERIAL EXAMINED. One paratype (female), labelled: GILGIT, Österr. Karakorum Expedition 1958 // PARATYPUS. Rhyssemus falcatus m. Petrovitz, coll. Petrovitz, in MHNG.

ADDITIONAL MATERIAL EXAMINED. Two specimens (1 male and 1 female), labelled: PAKISTAN: Chitral/Madaglasht 30 m 26. V. 1983/Besuchet – Löbl: 1 specimen (male), labelled: 26. 6. 1985, leg. S. VIT, à vue, St. Pierres/berges, au de Gilgit, Gilgit PAKISTAN sept. [Gilgit is in Kashmir – the locality "Gilgit PAKISTAN" is probably due to a mistake]. All in MHNG.

Results of the examination are summarized in the table presented below and in Figs 1 and 7–14.

DISTRIBUTION. India: Kashmir; Pakistan.

Rhyssemus helenae Pittino, 1983
(Fig. 2)

Rhyssemus helenae Pittino, 1983: 114; figs 3, 15, 34–37; Dellacasa 1988: 340, 423 (catalogue); Stebnicka 1989: 7, 29 (revision).

TYPE LOCALITY. W-Pakistan (N Sind), Gund (Pittino 1983).

TYPE MATERIAL EXAMINED. One paratype (female), labelled: W-Pakistan (N. Sind), Gund m 2500 // Rhyssemus helenae n. sp., Det. R. Pittino, PARATYPUS, in GDCG.

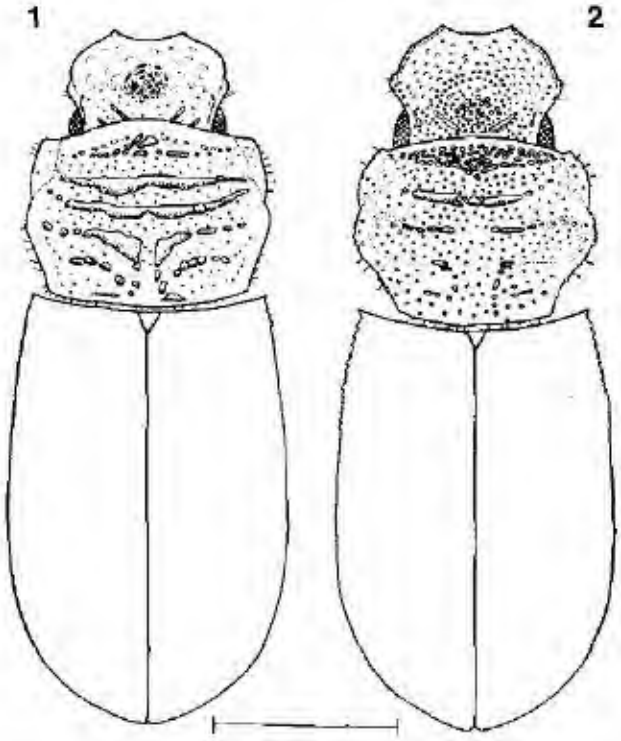
Results of the examination are summarized in the table presented below and in Fig. 2.
DISTRIBUTION. Pakistan.

Rhyssemus ahrensi sp. n.
(Figs 3–6, 15–20)

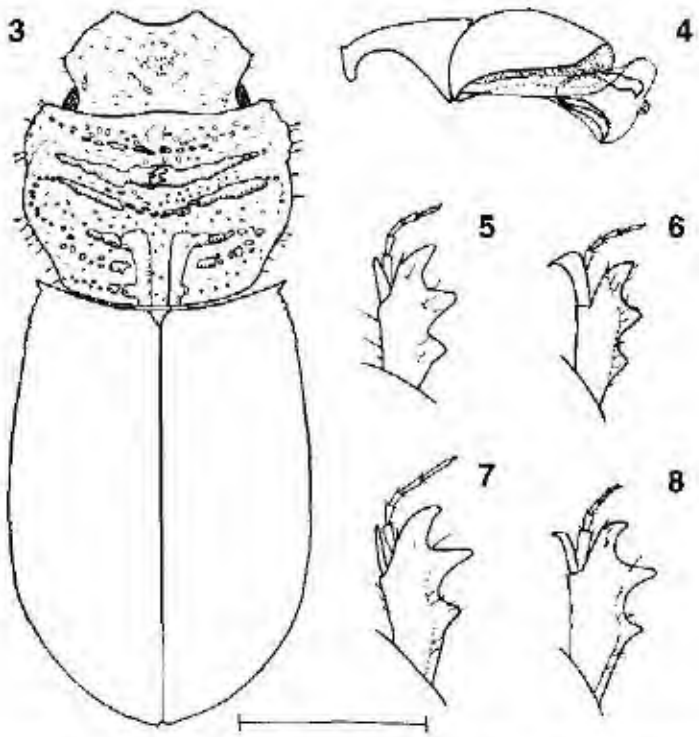
TYPE MATERIAL. Holotype (male), allotype (female), and paratypes Nos 1–50 (males), Nos 51–101 (females), labelled: NEPAL-HIMALAYA 9. 6. 1993 Kagbeni/Dhaulagiri (Mustang-Distr.) Kali Gandaki riv. 2900 m, lg: D. Ahrens; paratypes Nos 102–104 (females), labelled: NEPAL-HIMALAYA, Annapurna-Mts., leg. Ahrens 1993 / / Jomsom bis Tukuche, 10. 6. 2500–2700 m; paratypes No. 105 (male), 106–108 (females), labelled: NEPAL-HIMALAYA 3./4. 6. 1993 Kangsar-Schluchi zw. Kangsar u. Tilicho-Lake bas. 4200 m lg. D. Ahrens. Holotype, allotype and paratypes Nos 1–38, 51–90, 102–108 in DACD, Nos 39–44, 45–50 in DKCP and Nos 90–95, 96–101 in MRCD.

DESCRIPTION. Body elongate, oval, convex (Fig. 3), dark brown, nearly black, alutaceous, only elevated formations (granules, ridges) moderately shining.

Body length 2.7–4.1 mm.



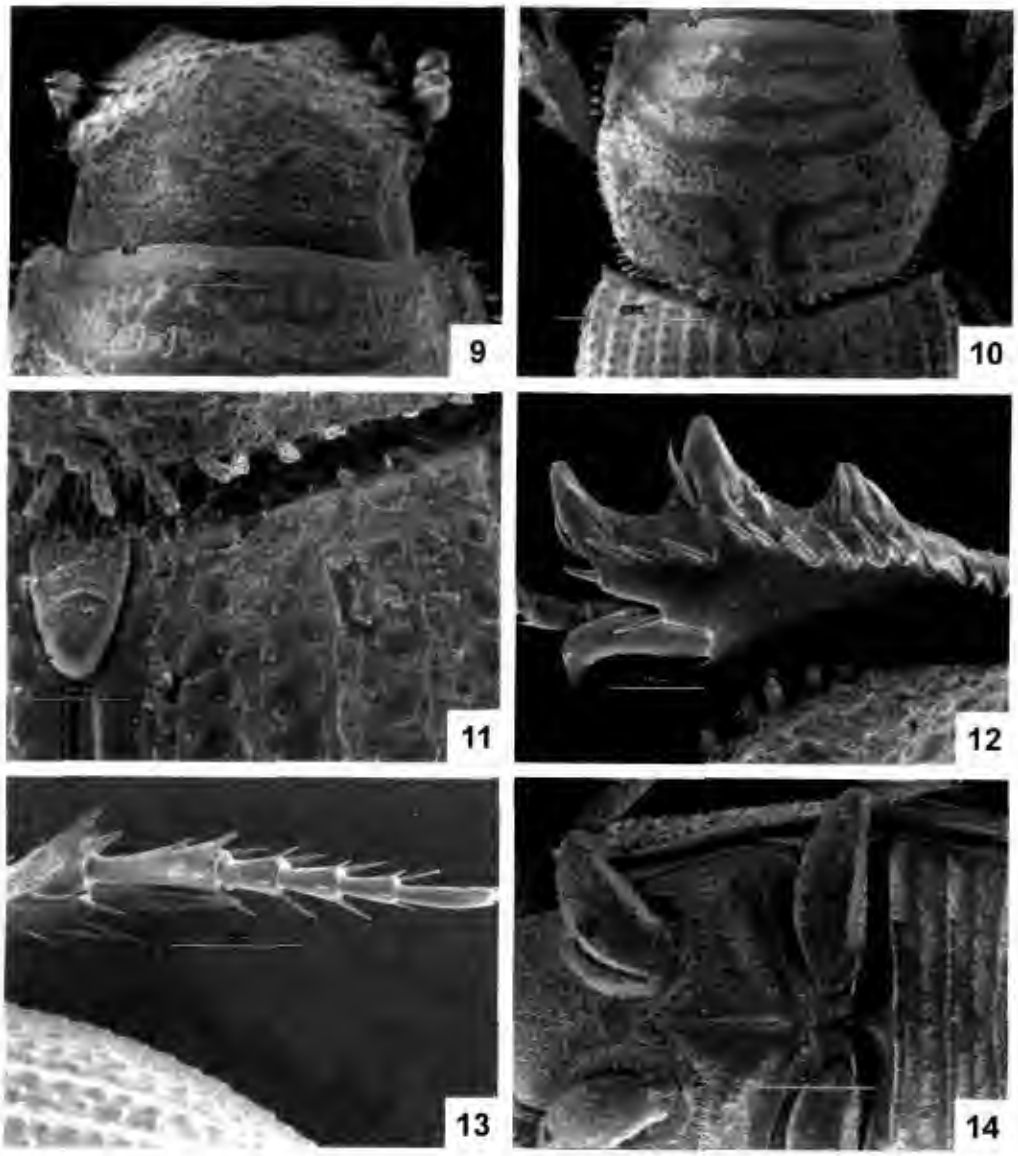
Figs 1, 2. Body shape and sculpture of head and pronotum, dorsal aspect; 1 – *Rhyssemus falcatus* Petrovitz (Kashmir: Gilgit), 2 – *R. helenae* Pittino (Pakistan: Gund, paratype); scale line: 1 mm.



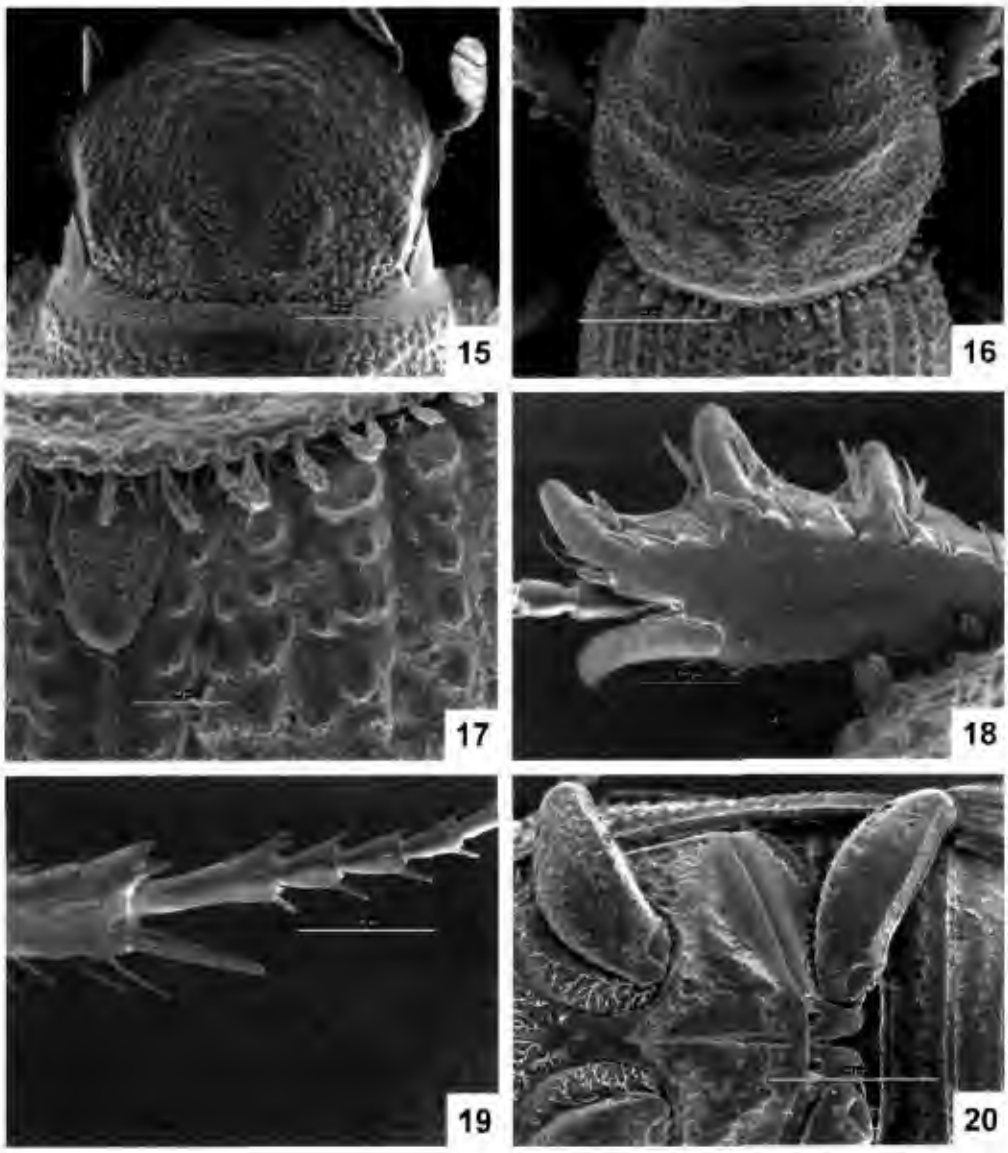
Figs 3–8. *Rhyssemus ahrensi* sp. n., holotype (3-6), *R. falcatus* Petrovitz (Kashmir: Gilgit) (7, 8). 3 – body shape and sculpture of head and pronotum, dorsal aspect; 4 – aedeagus, left lateral aspect; 5, 7 – right female protibia, dorsal aspect; 6, 8 – right male protibia, dorsal aspect; scale line: 1 mm for 3, 0.25 mm for 4, 0.5 mm for 5–8.

Head (Figs 3, 15) convex, granulate. Clypeus with acute, upward lifted denticle each side of anterior emargination. Head vertex with only one pair of rather indistinctly delimited oblique ridges. Granules of median gibbosity larger, rather indistinctly delimited, granules on head vertex smaller, these along clypeus margins small, mostly transversal. Genae distinctly protruding, without notches, with few acute setae. Supraorbicular swellings formed by more or less indistinct rows of granules.

Pronotum (Figs 3, 16, 17) transversal, length-to-width ratio 1:1.41, with five transverse ridges, five transverse furrows, posterior longitudinal furrow and pair of accessory swellings. First ridge formed by rather indistinctly delimited, discrete granules; granules along its posterior margin usually larger. Second and third ridges partially continuous, sometimes irregularly incised, however, usually not completely interrupted at middle. Medial parts of fourth ridge as well as longitudinal keels each side of posterior longitudinal furrow mostly continuous. Fifth ridge vestigial medially, passing into rather indistinct arrangement of small granules laterally. Accessory swellings (situated between right and left branches of fourth and fifth ridges) consisting of large, sometimes partially confluent, granules. All transverse furrows as well as posterior longitudinal furrow with small granules. Third furrow considerably wider than third ridge and considerably impressed laterally (at its ends), otherwise furrows narrower than respective ridges. Areas of pronotum anterior corners considerably depressed, pronotum considerably narrowed at posterior angles. Lateral margins very



Figs 9–14. *Rhynsemus falcatus* Petrovitz (Kashmir: Gilgit); 9 – head; 10 – pronotum; 11 – right elytron basis; 12 – right male protibia; 13 – right male metatarsus; 14 – left meso- and metafemur, metasternal plates and ventrites; dorsal aspect (9–13), ventral aspect (14)



Figs 15–20. *Rhyssemus ahrensi* sp. n., holotype: 15 – head; 16 – pronotum; 17 – right elytron basis; 18 – right male protibia; 19 – right male metatarsus; 20 – left meso- and metafemur, metasternal plates and ventrites, dorsal aspect (15–19), ventral aspect (20).

Tab. 1. Comparison of selected characters of discussed *Rhyssemus* Mulsant species

Rhyssemus falcatus Petrovitz	*Rhyssemus helenae* Putino	*Rhyssemus ahrensi* sp. n.
Dark brown, nearly black, even elevated areas (surfaces of granules and ridges) not quite shining	Shining, head and pronotum dark brown (clypeus margins and pronotum anterior corners reddish brown), elytra reddish brown	Dark brown, nearly black, alutaceous, only elevated structures (granules, ridges) moderately shining.
Head mostly densely granulate. Granules distinctly delimited, larger and of various shapes in the area of median gibbosity, smaller and rounded behind it, transverse and sparsely distributed along clypeus margin (Figs 1, 9)	Head densely granulate, granules relatively uniform, distinct (Fig. 2).	Head sparsely granulate, granules relatively less distinctly delimited, variable, sometimes individual granules transversely elongate (Figs 3, 15).
Two pairs of oblique ridges present on head vertex. Ridges of anterior pair considerably convex, prevalently continuous. Those of posterior pair rather vestigial, however, distinct, each of them formed by one or two granules or by a short swelling (Figs 1, 9)	Only one pair of oblique ridges present on head vertex, convex, prevalently continuous (Fig. 2)	Only one pair of oblique ridges present on head vertex, rather obsolete, frequently broken into discrete granules (Figs 3, 15)
Genae only slightly protruding beyond clypeus lateral margins (Figs 1, 9).	Genae considerably protruding (Fig. 2)	Genae considerably protruding (Figs 3, 15).
Granules of first pronotal ridge distinct, however, some of them confluent with neighbouring ones (Figs 1, 10)	Granules of first pronotal ridge distinct, discrete (Fig. 2)	Granules of first pronotal ridge rather flat and obsolete (Figs 3, 16)
Traces of longitudinal swellings along posterior longitudinal furrow present only at medial interruption of fourth ridge, attenuated in direction of fifth ridge (Figs 1, 10)	Longitudinal swellings along posterior longitudinal furrow formed only by rows of discrete granules (Fig. 2)	Longitudinal swellings along posterior longitudinal furrow mostly continuous, complete (Figs 3, 16)
Elytra subparallel, length-to-width ratio 1:0.636	Elytra slightly widened posteriorly, length-to-width ratio 1.650	Elytra more considerably broader behind, length-to-width ratio 1:0.667
Large granules of elytral intervals essentially flat (Fig. 11)	Large granules of elytral intervals very distinct, acute	Large granules of elytral intervals distinct, however, blunt (Fig. 17)

distinctly crenate anteriorly, lateral and basal margins equipped with apically considerably dilatate setae (Fig. 16).

Elytra broader posteriad, length-to-width ratio of 1:0.667, with ten striae and ten intervals exerting no differences between neighbouring even and odd ones, with strong, acute humeral teeth. Striae with two rows of granules; granules of lateral rows large, quite distinct even in top view, those of medial rows smaller and less distinct (Fig. 17). Tenth interval lower, however, not quite flat and only slightly shortened apically.

Macropterous.

Ventral surface dark brown. Metasternum surface prevalently granulate, metasternal plate smooth, with complete, essentially uniform, posteriorly slightly widened longitudinal furrow (Fig. 20). Pro-

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BOOK REVIEW

SERVICE M. W. **Medical Entomology for Students.** Second edition. Cambridge University Press, Cambridge, 2000. X+283 pages. Format 150×225 mm. Soft cover. Price Lstg 22.95. ISBN 0-521-66659-7

The author is Emeritus Professor of Medical Entomology at the Liverpool School of Tropical Medicine. He has written over 200 research papers on medical entomology and given advice and training in the field in over 50 countries. As stated in the first edition (by Chapman and Hall, 1996), the aim of this book was to provide basic information on recognition, biology and medical importance of arthropods and guidelines for their control. This second edition followed generally the same style and format. The volume is composed of 20 chapters. Within the narrative and conceptual framework of each chapter featured are external morphology, internal anatomy, life cycle, medical importance, and control. Each chapter is concluded with a list of references under the headings 'further reading'.

Chapters 1 through 15 are devoted to families of insects of medical importance. Chapters 1 through 3 focus on mosquitoes (Culicidae) – vectors of malaria, filarial nematodes and arboviruses. General introduction provides insights into the external morphology of mosquitoes, their life cycle, classification, medical importance and control. Further on, analyzed are anopheline mosquitoes including the genus *Anopheles*, and culicine mosquitoes including genera *Culex*, *Aedes*, *Haemagogus*, *Sabethes*, *Mansonia*, *Coquillettidia* and *Psorophora*. Chapter 4 examines the blackflies (Simuliidae) – this family contains four genera that bite humans. The *Simulium* species transmit filarial nematode causing onchocercosis. Phlebotomine sandflies (Phlebotominae) are discussed in chapter 5. Species of two genera – *Phlebotomus* and *Lutzomyia* embrace both Old and New Words vectors of leishmaniases, sandfly virus and bartonellosis (Carrion's disease). The next set of chapters 6 through 8 takes account of three families of dipterans: biting midges (Ceratopogonidae), horseflies (Tabanidae) and tse-tse flies (Glossinidae) – vectors of African sleeping sickness. Chapters 9 and 10 are concerned with flies while surveying the common house fly *Musca domestica*, the greater house-fly *Muscina stabulans*, the stable-fly *Stomoxys calcitrans*, the *Fannidae* and the myiasis-producing flies: families Calliphoridae, Sarcophagidae and Oestridae. Chapters 11 and 12 focus on fleas (Siphonaptera) and lice (Anoplura). Chapters 13 and 14 provide coverage of bedbugs (Cimicidae) and triatomine bugs (Triatominae) – transmitters of Chagas disease. Chapter 15 deals with cockroaches (suborder Blattaria), namely with medically important species: the German cockroach *Blatta orientalis* and the American cockroach *Periplaneta americana*. These species mediate the transmission and harbourage of various pathogenic viruses, bacteria, protozoans and helminths.

Subsequent chapters give attention upon diverse groups of arachnids. Chapters 16 and 17 are concerned with soft (Argasidae) and hard ticks (Ixodidae). The only important disease transmitted to humans by soft ticks is the tick-borne relapsing fever. From the medical point of view the more important genera of hard ticks are *Ixodes*, *Dermacentor*, *Amblyomma*, *Haemaphysalis*, *Rhipicephalus* and *Hyalomma*. Some species of hard ticks present vectors of some species of rickettsiae *Coxiella burneti*, *Francisella tularensis* and many arboviruses. Next coming chapters 18 through 20 analyse the scabies mites (Sarcoptidae), scrub typhus mites (Trombiculidae) and miscellaneous other groups (Demodricidae, Pyroglyphidae and other mites).

The volume is concluded with a glossary of common terms relevant to medical entomology that are used in this book or that are pertinent to vector biology and control. Accurate line drawings feature adult insects and arachnids and their developmental stages, structural parts, principal characters of the various stages in the life cycle and a world map showing malaria epidemiological zones. In addition, there are summary-type tables overviewing main anopheline vectors of malarial plasmodia and principal mosquitoe transmitters of filarial worms. A clear, concise writing style makes this book accessible to undergraduate and graduate students of medical entomology, parasitology, tropical medicine and pest management, for whom it should be essential reading. The book is also intended as a substantial resource of information for physicians, health officials and community health workers, and those studying for a scientific degree of parasitology or medical entomology.

Jindrich Jira

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In memoriam RNDr. Ivan Heráň, CSc.

Ivan Heráň was born at Litomyšl, Eastern Bohemia, on 1 May, 1934. In 1952–1957, he studied at the Faculty of Biology, Charles University in Prague and graduated after having defended a thesis entitled "*Contribution to functional anatomy and ecology of the water vole, Arvicola terrestris L.*". This subject marked one of the two major scientific aims of I. Heráň: functional and comparative morphology of mammals. From Prague, he moved to České Budějovice where he worked as assistant at the Pedagogic Faculty for about one year. In 1958–1961, his professional career continued at the Laboratory of Vertebrate Zoology, Czechoslovak Academy of Science in Brno. There he started to prepare a post-graduate thesis on "*Adaptive characters of the skeleton in mustelid carnivores*". At the same time, the second dominant approach of I. Heráň to science became evident, viz. the study of animal behaviour. In his early years of research, he studied the grooming in shrews and badgers, the swimming in water voles and the behaviour of bears in captivity.

In 1961, I. Heráň moved to the National Museum in Prague where he worked until his retirement. There he completed his thesis and, at the Charles' University again, was awarded the CSc. degree in 1962 and RNDr. degree in 1966. At the museum, he held the post as an assistant (till 1962), a scientist (1962–1967) and a senior scientist (1967–1997) being a curator in mammalogy and osteology at the same time. It is uneasy to enumerate all of Dr. Heráň's activities at the Zoological Department of National Museum. Details have been published at the occasion of his 60th birthday by Anděra (1995). In that paper, also a bibliography of I. Heráň until 1994 has been summarized. It contains 68 scientific communications, 21 books, booklets or chapters in books and numerous popular articles, book reviews, bibliography accounts, jubilee reports and short communications. Let us mention "*Animal colouration*", "*L'animal et sa parure*", "*Das Tier und sein Kleid*" and "*Díváme se na zvířata*" [We are looking at animals] as examples of the most appreciated books by Dr. Heráň. He also contributed two volumes into a series of booklets "*Zvířata celého světa*" [Animals of the whole world], one devoted to ursid, the other to mustelid carnivores. The present obituary is supplemented by the list of Heráň's publications posterior to 1994.

From among various subjects dealt with by I. Heráň, mammalian osteology and odontology was favoured by him. He studied normal as well as atypical, anomalous or pathological characters in skulls and post-cranial skeletons. Under his curatorship, the osteological collection of the Department of Zoology grew up to more than 16 thousands items being the largest in this country and an important one on a European scale. However, he also was interested in living animals, namely their activity and behaviour. In this respect he was significantly aided by his skill as a photographer and drawer. In addition to mammalogy, Dr. Heráň was involved in batrachology and published four papers concerning the movements, territoriality, colouration and colour changes of the frog *Rana temporaria*.

In 1962–1997, he was the editor-in-chief of the mammalogical journal *Lynx* issued by National Museum. He merits

praise for increasing the scientific level of *Lynx* which, from a local periodical, evolved into an internationally renowned journal. Besides his work at the museum, Dr. Heráň was also involved into various pedagogic duties at the Department of Zoology, Faculty of Science, and the Department of Museology, Faculty of Philosophy, both of Charles University, Prague. He was member of numerous committees of Czechoslovak zoological gardens and, in 1993, the minister of agriculture of the Czech Republic nominated Dr. Heráň a member of the Central Committee for the Protection of Animals.

I. Heráň held various posts of the former Czechoslovak and the present Czech Zoological Society during the last 30 years. This engagement culminated when he was elected the president of the Society in 1993 and again in 1996, thus he served as president until 2000. He was deeply interested in all Society's activities, including the publication of this journal and this devotion did not ceased after his presidentship was over. Ivan Heráň died on 5th September, 2001. We remember him as an excellent scientist, good colleague and man. He will be greatly missed among zoologists and among members of the Czech Zoological Society in particular.

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CONTENTS

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